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Visitor Use Management Workshop
Findings and Recommendations

GRAND CANYON
National Park

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Visitor Use Management Workshop Findings and Recommendations

November 1992

GRAND CANYON

National Park • Arizona

United States Department of the Interior • National Park Service • Denver Service Center

Acknowledgements

We would like to thank all of the individuals who shared their knowledge about how to successfully manage visitors in high use areas. Their enthusiasm and commitment to excellence made the workshop a success.

We would also like to acknowledge the support of the National Parks and Conservation Association and the Grand Canyon National Park Natural History Association for helping fund the workshop. The conservation association also helped select the participants and establish the format and agenda for the workshop.

SUMMARY

Successfully meeting the National Park Service's mandate — to conserve the natural and cultural resources that the parks were created to protect, and at the same time to provide for public enjoyment in ways that will leave park resources unimpaired for the enjoyment of future generations — requires that these twin goals be carefully addressed in any planning process.

As part of the process to develop a new general management plan for Grand Canyon National Park, the question of how to manage high visitor use areas was considered at a workshop in June 1992. Focusing on Grand Canyon's South Rim as a case study, the workshop brought together some 35 professionals from the private sector and the National Park Service to look at approaches for providing a quality visitor experience in high use areas.

The recommendations that follow are the opinions of the professionals who attended the workshop and do not necessarily represent those of the National Park Service. There was consensus among participants on some points, and dissenting opinions on others. We have tried to summarize the range of viewpoints as accurately as possible in this document, and all the recommendations will be evaluated further as we move forward in developing the Grand Canyon general management plan.

The workshop participants agreed that the park should be proactive in handling visitors rather than reactive. Toward this goal two general recommendations were made: (1) the park should take care to provide quality experiences for each visitor and consider it a priority, and (2) the park should take aggressive steps in high use areas to control actions of visitors without limiting their choices. In all cases resource preservation should be carefully considered. The Park Service should strive to educate visitors, to provoke their interest, to guide them, and to interpret the uniqueness of the resource, but it should not attempt to meet every visitor's need.

General recommendations for managing visitor use from the workshop are applicable to many areas in the national park system. These recommendations, as summarized below, relate to all phases of the visitor experience, from getting information to people before they arrive in a park to finding out what people think about their experience when they leave.

INFORMATION

Before people arrive at a park, they need to know what to expect in terms of overnight accommodations, crowded conditions, and in-park access and transportation. Information should be provided through broadcast and printed media, as well as at regional orientation centers or kiosks. A central information network for all national park system areas, and a park telephone information system, would be additional ways of getting accurate information to the public. Visitors should be provided with enough information so they can make informed choices about when to visit the park, how to experience the resource, and what generally to expect.

Inside the park a comprehensive, coordinated program for getting information to visitors is needed, with information being constantly updated. As visitors enter the park, information should be presented in a logical sequence, using coordinated graphics and the same terms and logos for all forms of communication. Signs must be simple, and messages should be repeated several times so visitors have enough time to decide what to do.

Answers to the most frequently asked questions should be readily available to visitors through handouts, signs, or interpretive displays, thus giving park staff more time to answer difficult questions in person. An in-park telephone information system would also be an efficient way for people to get information without having to go to headquarters or a visitor contact station.

All visitor contacts with park or concessioner employees and volunteers should be pleasant, and the information given out must be accurate and up-to-date. Hosts could be stationed in high visitor use areas to answer questions, and park interpreters could also give impromptu interpretive programs in these areas, especially where people are waiting.

All employees who are seen by the public (particularly bus drivers and employees at tour desks, restaurants, and lodging check-in) should be fully trained so they can help people experience the park and help them understand and appreciate the resource. International symbols should be used on signs, maps, brochures, and interpretive wayside exhibits.

INTERPRETIVE PROGRAMS

Greater efforts should be made to take interpretive programs to the visitors, rather than expecting them to come to scheduled programs. One function of interpretive talks should be to explain to visitors what types of activities can harm park resources (for example, feeding wildlife) and to suggest reasonable alternatives. Interpretive programs should provide different viewpoints and perspectives on the history and significance of park resources, including Native American perspectives. Interpretive programs also need to be tailored to people with different levels of interest, including children, and educational materials that relate directly to programs or museum exhibits (such as books, maps, videos, and games) should be offered.

The number of park interpreters needs to be increased so more visitors can benefit from personal interpretive programs. Volunteers can be used to augment the interpretive staff, but not to replace NPS employees.

For visitors from other cultures and countries interpretive programs should include printed materials in foreign languages, videotapes, and audiotapes keyed to interpretive wayside exhibits. At parks with high volumes of international visitors efforts should be made to recruit personnel familiar with the needs of foreign visitors and with a knowledge of the appropriate foreign languages.

VISITOR USE PATTERNS

The sequence of park visitor activities should be simple and logical, and facilities need to be designed to support the expected visitor flow patterns. Entry station information stops should be short and should take only about 20 seconds. Major facilities, such as bus stops and trip-planning areas, should be planned with sufficient staffing and scheduling so visitors do not wait longer than 15 minutes. If waits are longer, people should be told by hosts or signs how long they will be waiting. In waiting areas visitors need to have places to sit, as well as shade, restrooms, water, and maybe even vendor carts or machines for snacks and beverages.

Visitors can be distributed by offering people informed choices for what they can do and letting them make the decision.

Visitor activities should be tailored to the time visitors have, for example, a visit of one or two hours, one or two days, or several days. If one area is particularly crowded, people should be told that and given other options.

Park personnel should go out of their way to talk to visitors and find out what they think of their stay and what needs to be improved. Data should also be routinely collected about how many people use certain areas, how long they wait, how they found the condition of the resources, and whether their experiences met their expectations. This base information should be used to determine what management and design techniques may improve a park's visitor capacity while enhancing resource preservation. Also, management and design techniques can help improve how many visitors can be served.

Parks should be consciously managed to provide a diversity of visitor experiences; different areas within the park can offer different types of opportunities for visitors. If diverse experiences are not carefully managed and visitor numbers increase throughout the park, then diversity begins to disappear, and all areas gradually become developed and offer the same types of opportunities.

Park managers should identify the range of opportunities visitors have, along with the visitor experience available at each area. The desired visitor experience for each area should be determined through management objectives. Some participants felt that the level of acceptable impact should be defined in terms of measurable indicators for the desired experience. As part of this process, managers need to decide what level of impact on park resources is acceptable. Standards should then be established to indicate when an experience is no longer enjoyable or when impacts have become unacceptable.

PARKING / STAGING / ORIENTATION AREA

In high use areas, such as portions of Grand Canyon's South Rim, visitors need to be separated from their cars in order to have a quality resource experience; this allows for higher visitor use and at the same time helps preserve the resource.

Staging areas should provide safe parking facilities, transit connections, park information, and restrooms at a minimum. If the area is combined with a visitor center, it should also have a trip planning area, park orientation and information about the primary interpretive themes, and at least water and food or beverage machines. The specific uses will differ, depending on the type of resource in the park and the most appropriate sequence of visitor activities. The staging area should be planned so that visitors have an easy connection to the prime resource that they came to visit — for the Grand Canyon, this means direct access to the rim for viewing the canyon.

VISITOR TRANSIT SYSTEMS

In-park transit systems should be readily available. The system must be convenient and accessible to all types of visitors, and information about the system (schedules and routes) must be clear and concise so people know where they are going and can relax and experience the park. Service needs to be reliable and frequent, and there must be the capability of adding more vehicles to meet capacity on peak use days or in emergency situations.

The benefits of using a transit system should be obvious so that visitors will want to use it. In addition to a motorized transit system, separate bicycling and walking paths should be provided between major use areas. Trails should be designed for safety and easy accessibility. Major visitor use areas that attract large numbers of visitors should be set aside as areas for pedestrians only.

AN ATTRACTIVE AND QUALITY BUILT ENVIRONMENT

All park facilities and operations should be geared toward preservation while ensuring a quality visitor experience. Architectural design guidelines should be adopted to help establish a consistent development theme and ensure that all parts of the built environment are compatible, from major structures to the design of trash receptacles. However, visitor development needs must also be balanced with resource protection needs, and the level of development should be appropriate to the desired visitor experience.

Maintenance facilities and functions, as well as service areas, should be separate from and screened from the view of visitors. Maintenance activities need to be ongoing so that all facilities, down to the last detail, are in top condition. All employees should be encouraged to take pride in the appearance of the park, underscoring to visitors the need for their help in keeping litter picked up and the park clean. At the same time visitors should be made part of ongoing efforts to protect and preserve park resources. Through interpretive programs they should understand the importance of being sensitive to cultural and natural resources and the importance of using alternative modes of transportation, as well as recycling and helping conserve energy.

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INTRODUCTION

The National Park Service's mandate has two primary goals — to conserve the natural and cultural resources that the parks were created to protect, and at the same time to provide for public enjoyment in ways that will leave park resources unimpaired for the enjoyment of future generations. These goals are now being addressed for a new general management plan for Grand Canyon National Park.

At Grand Canyon, as well as at several other units of the national park system, the question of how to manage the park for ever increasing visitor use is a critical issue. This subject was discussed at a visitor use management workshop held for three days in June 1992 and using Grand Canyon's South Rim as a case study. Approximately 35 professionals from the private sector and the National Park Service (NPS) met to look at approaches that have been successfully used to help ensure a quality visitor experience in high visitation areas, and to offer guidance for providing that type of experience at Grand Canyon.

The workshop brought together professionals with various backgrounds related to visitor use management. There were experts from major public and private institutions where large and diverse groups of visitors are effectively managed on a daily basis, such as the vice president of resort recreation for the Walt Disney Company, the admissions coordinator for the National Aquarium in Baltimore, Maryland, the assistant director of the Smithsonian Institution's Museum of American History, and the former planning director for Vail, Colorado. There were also specialists in measuring the quality of the visitor experience and recognizing associated resource impacts. These experts included university professors in natural resources, leisure studies, and recreation, as well as representatives from the National Parks and Conservation Association and the manager of industrial engineering for the Walt Disney Company.

From the private sector were specialists in transportation and recreation planning, and representatives of Grand Canyon National Park Lodges, the park's primary concessioner on the South Rim. To round out the list of participants, professionals from the park staff, Yosemite National Park, Lake Mead National Recreation Area, the Western Regional Office, and the Denver Service Center were on hand to provide background knowledge about the National Park Service and Grand Canyon National Park specifically.

Approaches that have been successfully used to manage visitor use outside the national park system, as well as methods for determining when and how visitor use should be more directly managed to protect significant natural and cultural resources, are summarized in appendix A. The knowledge gained from these approaches was directly applied to visitor use problems on the South Rim of Grand Canyon, as described in the following recommendations. Short-term actions that could be undertaken at Grand Canyon National Park pending the completion of the general management plan are listed in appendix B. The short- and long-term recommendations may also be applicable in other national park system areas.

THE VISITOR EXPERIENCE ON THE SOUTH RIM, GRAND CANYON NATIONAL PARK

View of the Grand Canyon from the South Rim

Grand Canyon National Park is unique and is known around the world; as a result, it draws a tremendous number of visitors. It has one of the greatest visitation rates of any park in the western United States, with 4.2 million visitors in 1991. Visitors come from every country in the world, and they arrive with a variety of expectations.

There is no stereotypical park visitor -- the spectrum ranges from tour group visitors who spend a few hours or a night in the park to people who spend several days or even weeks rafting on the Colorado River or hiking the park's backcountry trails. One of the challenges for park managers is to try to meet all these expectations so that people leave with a positive experience.

Visitors have a tremendous range of choices to experience the Grand Canyon. They can remain on the South Rim, which in some areas is more oriented to an urban social experience, or they can stay on the

To many visitors Grand Canyon Village provides an urban social experience.

Many other areas of the park, such as the North Rim, offer chances for more solitary experiences.

North Rim, which is more relaxed and rural. If they choose, they can hike or ride mules down the Kaibab and Bright Angel trails and stay at the rustic Phantom Ranch at the bottom of the canyon, or they can have a solitary experience on lesser used backcountry trails either on the rims or in the canyon. Visitors also have the opportunity to ride the Colorado River and experience its world-renowned whitewater rapids.

Visitors can either hike into the canyon or ride mules.

Rafting down the Colorado River is a unique experience for visitors.

Since 1950 the annual growth rate in visitor use at Grand Canyon has averaged 2%, but in the last five or six years the growth rate has been closer to 10%–12%. If visitor use is projected to the year 2020, a 2% growth rate would result in 6 million annual visitors, but a 10% growth rate would result in 12 million visitors. Based on present trends, a steeper projected growth rate may be more likely.

THE SOUTH RIM

The South Rim is open year-round, with the peak season extending from April through late October. It is visited by approximately 92% of the park visitors, and 28,000–30,000 visitors come on a peak day. About 80% of the South Rim visitors enter through the south entrance of the park, and 20% through the east entrance at Desert View. Approximately 82% arrive in cars, 15% in tour buses, and 3% on the train from Williams, Arizona. There has been a significant increase in tour bus use (100 buses per day), and an estimated 80% of the buses come just for the day (buses traveling from the Tusayan airport probably make up most of those trips).

The Grand Canyon is not a sole destination for most visitors, rather it is one stop on an extended trip (the most visitors come from California, then Arizona). Nearly half of the park visitors are from other countries.

The objective of most visitors is to see the panoramic views for which the Grand Canyon is famous. However, due to the natural formation of the canyon, these views are only available from the canyon's edge, and just a few hundred feet back from the rim visitors have little indication of the spectacular views that await. As a result, people concentrate at key viewpoints along the rim. Once visitors have seen the canyon, they generally want to use comfort facilities and find out more about the park. A sizable number of visitors stay in the park for just a couple of hours — they view the canyon from a few overlooks and then leave.

Visitors concentrate at viewpoints all along the South Rim, particularly around the village.

The South Rim, the park's major developed area, includes Grand Canyon Village and Desert View (see the South Rim and the Grand Canyon Village maps). Much of the village, which is near the center of the South Rim, is within a national historic district and dates back to the early 1900s. Many structures now used for lodging, dining, and shopping are on the National Register of Historic Places and still have many special historic characteristics.

Much of the village was originally built by the railroad, and a historic rail line (with daily service from Williams) still serves the site. Many of the remaining original management support facilities, such as the mule barns and concession maintenance facilities, are clustered in and near the village.

The historic Lookout Studio, built in 1914, is used as a concession gift shop.

The majority of visitor use problems on the South Rim relate to the fact that present use levels exceed facility capacities and place demands on services that cannot be met. Much of the park's visitor and management infrastructure dates from the 1950s and is not equipped to handle 4 million visitors a year.

The visitor center has insufficient space for visitor services and is poorly located, resulting in inadequate service. Many visitors have little direct contact with park personnel, and there is no system to fully address visitor needs. Visitors have a difficult time reaching the park by phone during the summer since the lines are usually busy.

The Indian Watchtower at Desert View, built in 1932, is used as a concession gift shop and viewing tower.

Hopi House, a historic structure built in 1905, is used as a gift shop for Native American handcrafts.

The visitor center's insufficient space and poor location make it difficult to provide adequate services.

Overnight facilities are at or near capacity much of the year, and food service facilities cannot meet demands during peak hours.

Parking is insufficient, and traffic congestion is worsened by overflow parking along roadsides. A shuttle system operates on a limited schedule and does not fully meet visitor needs.

The solutions to these problems require the Park Service to find ways to more efficiently and effectively handle the visitors that are coming now, and to create better methods through appropriate planning and design for managing people in the future.

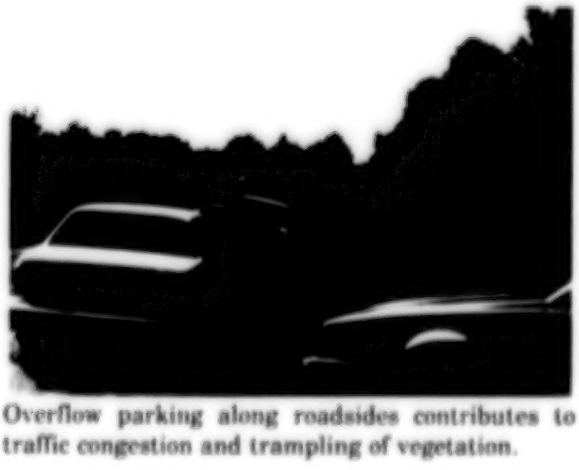
TRANSPORTATION ON THE SOUTH RIM

Road Network

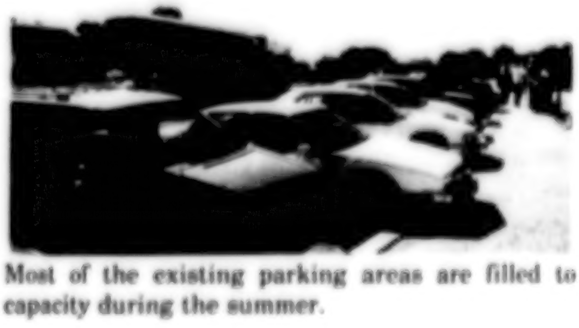
There are 50 miles of road on the South Rim, including 25 miles on the East Rim and 7–8 miles on the West Rim. Traffic on West Rim Drive is restricted because of high visitor use during the peak season (May through September), when visitor access is provided only by a shuttle system, although disabled visitors are allowed automobile access. On peak summer days most roads in the village operate at a level of service D (approaching unstable flow conditions with moderate to heavy delays); gridlock frequently occurs in July and August. Most roads on the South Rim operate poorly, in part because they evolved from mule and cart trails and were not planned for automobile or bus traffic.

Parking

During peak times about 6,000 cars per day use the road network on the South Rim (3/4 million vehicles per year). There are 1,650 parking spaces — 1,100 day spaces and 550 overnight spaces distributed in 19 lots; 15 of these lots are usually at capacity during the peak season. Park and concession employees use the same



Overflow parking along roadsides contributes to traffic congestion and trampling of vegetation.



Most of the existing parking areas are filled to capacity during the summer.

spaces as visitors. About 10% of the vehicles coming into the park are oversized and cannot be appropriately accommodated in most existing lots. When the lots fill up, parking overflows onto adjacent roadsides, resulting in additional congestion, trampling of vegetation, and occasionally blocking entrances and exits. Desert View has four bus spaces, but frequently there can be 10 buses there at one time.

Visitor Transit System

The park operates a free shuttle system for visitors, with three different loop systems. In 1990 a total of 2.6 million rides were provided.

Village loop — The village loop is 6.4 miles round-trip, has 14 stops, 90,000 riders per season, and 1,500 passengers during a peak hour; the system is at capacity about 25 days per year. It is difficult to keep the system on schedule because of traffic congestion. Some people become frustrated with the shuttle and the transportation situation in general and may decide to return to their own vehicles or even leave the park.

West Rim Drive — The shuttle system on West Rim Drive travels 16 miles round-trip, makes 16 stops, takes 90 minutes, and has 1.6 million riders per year, with 3,000 passengers during a peak hour; it is at or over capacity about 50 days per year. There are surge problems when thunderstorms force people onto available shuttle buses and during sunset. The shuttle runs from 7 A.M. to 7 P.M., which does not accommodate visitors wanting to watch the sunset during the summer — a major attraction. Often people are afraid to get off the shuttle bus for fear they will not be able to get a return seat.

Kaibab Trail shuttle — The Kaibab Trail system is a 13-mile round-trip, with two stops and 7,000 passengers per year; there are no capacity problems. It runs only in the morning and is used for access by hikers.

In addition, Grand Canyon National Park Lodges (one of the park's concessioners) provides a highly flexible and specialized transportation service that helps relieve some of the serious capacity problems on the park's existing shuttle system.

Grand Canyon Railroad

The Grand Canyon Railroad operates once a day from Williams, Arizona, with four passenger cars and about 300–400 people

The park's current shuttle system does not fully meet visitor needs.

During summer some 300–400 visitors arrive daily by train, creating surge problems for park facilities.

per trip. There is a surge problem when the train arrives, and the passengers are looking for restrooms, restaurants, or views from the rim. The railroad company has proposed running a spur from the Tusayan airport, which could result in up to eight train trips per day and several thousand additional visitors arriving in the village area.

Major Transportation Issues

The major transportation issues are insufficient parking, inadequate public transit, and a lack of pedestrian and bicycling facilities. Because of the shortage of parking spaces in the village area (up to 1,000), one solution would be to have visitors park at a staging area and to provide expanded shuttle services (buses, light rail, or a monorail). To handle 4 million visitors (the 1990 visitation) such a staging area would need 3,300 spaces and 350 oversized spaces; for 6 million visitors, 4,600 regular spaces and 525 oversized spaces. A transit system would have to accommodate 4,500 passengers per hour to handle 4 million visitors, and 6,600 passengers per hour to handle 6 million visitors.

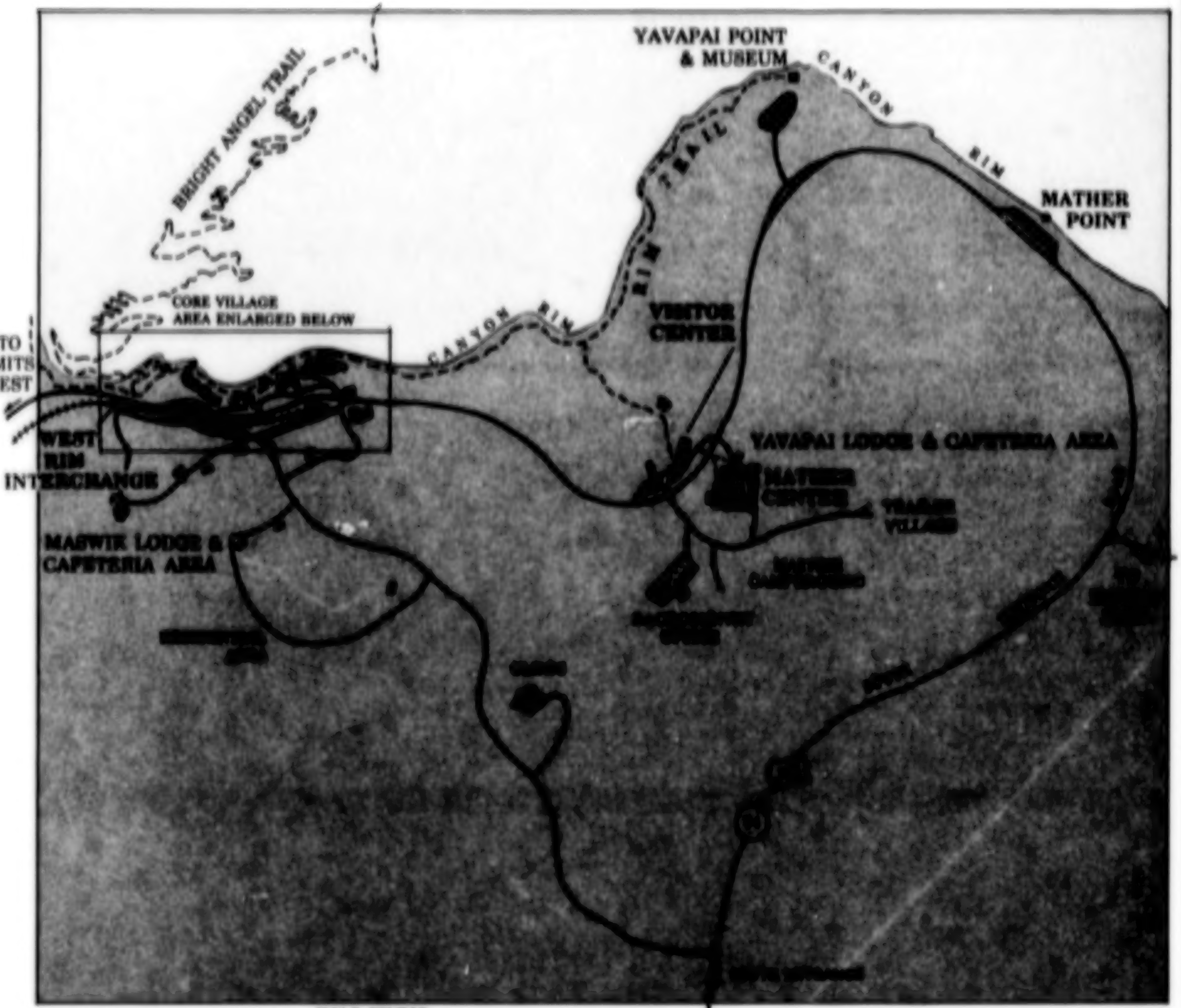
CONCESSION OPERATIONS

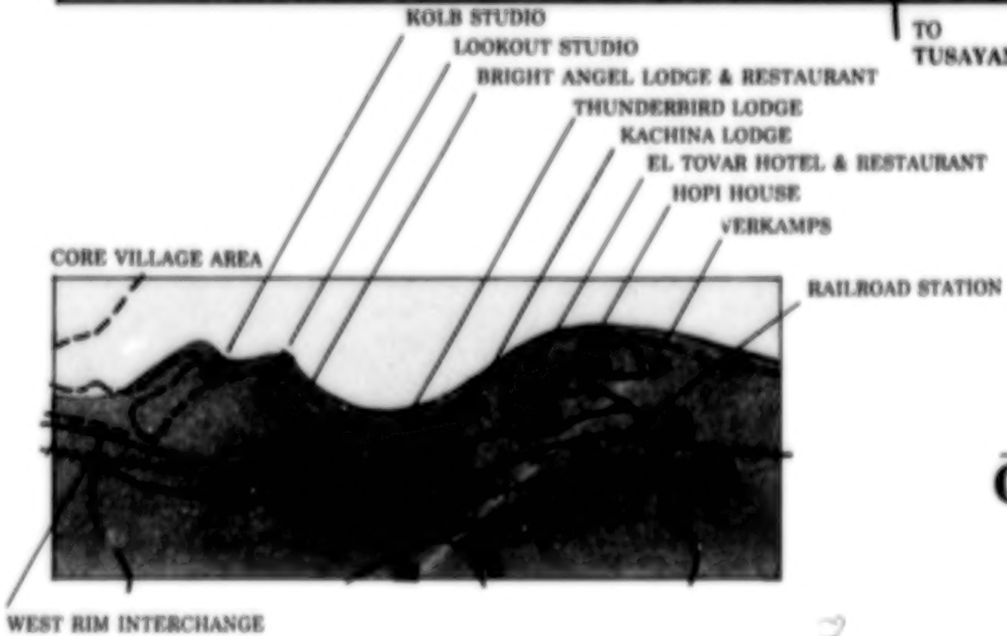
Amfac Resorts, Inc., the parent company of Grand Canyon National Park Lodges, is the principal concessioner on the South Rim of Grand Canyon National Park. The Fred Harvey Company, a subsidiary of Amfac Resorts, is one of the oldest hotel companies in the United States. The company operates El Tovar hotel in the Grand Canyon Village, which was completed in 1905, along with five other overnight lodges on the South Rim; altogether there are approximately 900 units, which are fully occupied about four months a year. The company also provides food service (ranging from a snack bar and deli to one of the finest restaurants in northern Arizona), in-park transit services for over 100,000 visitors a year, and retail gift shops (with sales items ranging from inexpensive souvenirs to high-quality native handcrafts).

The historic El Tovar hotel, opened in 1905, offers a fine dining experience for park visitors.

Grand Canyon National Park Lodges strives to provide quality services to visitors. All the visitor problems that affect the park also directly affect the concessioner, who is providing basic visitor needs for food and lodging. Concession employees are highly visible and more numerous than NPS staff, and they provide a public information role by helping orient visitors to the park.

The greatest problems confronting Grand Canyon National Park Lodges relate to keeping up with increasing visitor demands for services and providing a quality service, particularly during surge times (for example, when the train from Williams arrives). Four years ago, when the park had 3 million visitors, the company thought it was operating at capacity; now with over 4 million visitors they are struggling to keep up with the demand. From their perspective, if additional facilities are not provided, park visitation must eventually be limited.





GRAND CANYON VILLAGE

GRAND CANYON

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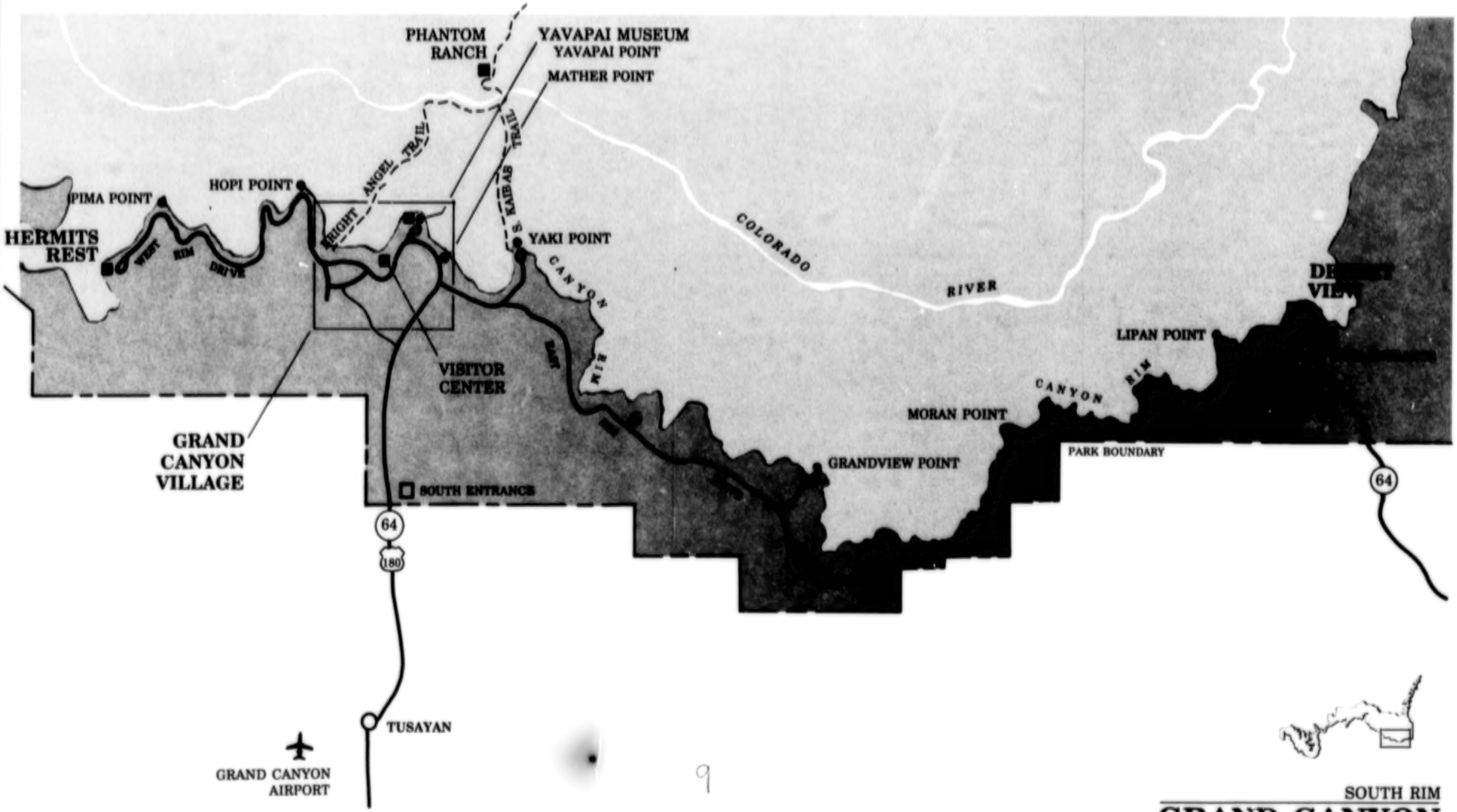

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SOUTH RIM

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RECOMMENDATIONS FOR THE VISITOR EXPERIENCE ON THE SOUTH RIM

To have a quality visitor experience, visitors must have easy access to information, they need to have opportunities to learn about what they are seeing, and they should be able to make informed choices about what they want to do. To establish a framework for providing quality visitor experiences, workshop participants were asked to list what they thought was the most logical sequence for visitor activities. The result was not a purely linear sequence of activities but much more of a clustering approach that depended on the type and detail of information required at certain times in order for visitors to have a quality experience. Some activities should overlap, and at some points activities should occur simultaneously. In addition, sequence patterns could be different for day visitors, who most likely want to get to the rim right away, and overnight visitors, who have more time and may want to check in at their overnight accommodations before pursuing other activities (see the diagram of the generalized visitor activity sequence).

Before visitors start their trip (ideally several months in advance), they should have access to general information about the Grand Canyon so they can begin planning their trip and making reservations for lodging, campsites, raft trips, and mule rides. Once visitors are on their way to the park, more specific information should be provided to meet visitors' needs.

Inside the park day and overnight visitors should be quickly routed to their initial destinations. At this point trip-planning services, park orientation facilities, and basic amenities should be available, the park's interpretive themes should be introduced, and a direct link should be provided to the prime resource — the Grand Canyon rim. There should also be convenient access to an efficient South Rim transit system. This sequence of events would provide the basis for a quality experience and would allow visitors to tailor the rest of their stays to suit their needs, whether they wanted to visit museums, attend interpretive programs, experience varied aspects of the park environment (the ponderosa forest as well as the rim viewpoints), or hike the park trails.

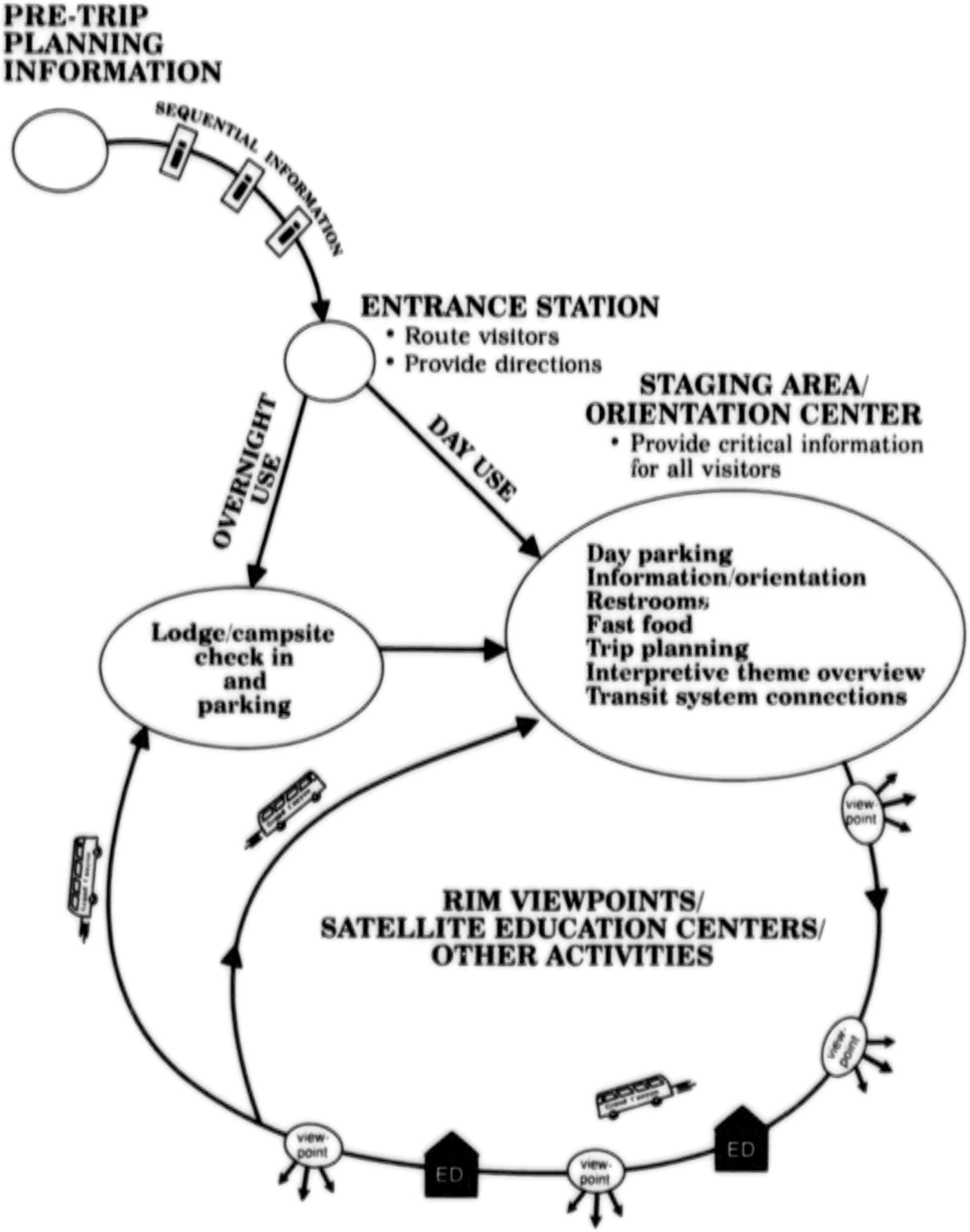
The following ideas and suggestions were developed by the workshop participants to focus on each aspect of the visitor experience. They incorporate the ideas and suggestions of the workshop participants, and alternative recommendations are noted.

INFORMATION / COMMUNICATION

The quality, quantity, and type of information should be carefully planned so visitors receive the right information at the most appropriate time. Information should be communicated to visitors in a positive and realistic manner.

Advance Information

The National Park Service and concessioners should be more proactive in getting information out to visitors and not wait to be asked. People need to know about the diverse opportunities available before they leave home so they can plan their trip before reaching the park; they also need to be aware of the level of commitment required for certain activities. This type of information could be best provided through the media (especially travel writers) and tour associations like the American Automobile Association.


PRE-TRIP PLANNING INFORMATION
SEQUENTIAL INFORMATION
ENTRANCE STATION
• Route visitors
• Provide directions
OVERNIGHT USE
DAY USE
STAGING AREA/ ORIENTATION CENTER
• Provide critical information for all visitors
Day parking
Information/orientation
Restrooms
Fast food
Trip planning
Interpretive theme overview
Transit system connections
Lodge/campsite check in and parking
view-point
RIM VIEWPOINTS/ SATELLITE EDUCATION CENTERS/ OTHER ACTIVITIES
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GENERALIZED VISITOR ACTIVITY SEQUENCE

SOUTH RIM, GRAND CANYON NATIONAL PARK

People should not be overloaded with information; they should be given what they need when they need it (generally people will not read a long brochure). They need to know what facilities require reservations and when reservations must be made. A brief information handout (about three pages maximum) could be developed to tell people what they have to do and by when. Similar information about the park or an information packet (possibly funded by advertisers) should be provided to visitors when their lodging reservations are confirmed. Also, videotapes to help visitors plan their trip could be sold.

A central communication system should be established for all national park system areas. In addition, a regional orientation and trip planning service for both call-in and drive-in visitors could be provided, with partial funding and information assistance from the National Park Service. For example, hotel chains offer toll-free reservations for any hotel in their chain. The Park Service could provide a similar service, with special emphasis on parks near the Grand Canyon (for example, the national parks in Utah). This should be a personalized system, with callers being able to talk to someone, not just listening to a recorded message. A toll-free number that people could call for the latest information specifically about the Grand Canyon could also be established, with the number printed on signs and brochures.

When people are on their way to the park and still within easy access of accommodations (about one hour away), they need to start getting basic information about the park, especially information that could help reduce frustrating experiences (for example, the availability of lodging or campsites so that they can consider getting accommodations elsewhere; or how crowded the park is — if people know that the park is crowded, they are prepared for it and it helps set their expectations). People should also be given information to help distribute use and reduce crowding in specific areas.

Information about what to expect could be communicated by means of electronic information boards or simple signs at regional visitor centers and highway pull-offs. Other options include working with chambers of commerce, the Forest Service, or other public agencies to jointly develop information facilities; establishing a welcome center in Williams or Flagstaff; providing information at state-operated highway rest areas, airports (provide park reservation telephones), and car rental companies; and asking radio stations to broadcast information for visitors (perhaps in Williams, Flagstaff, Cameron, and Kanab). All information must be kept current.

An information kiosk could be provided about 45–60 minutes from the park, with a design that would allow it to be staffed during summer and unstaffed during winter. About an hour away from the park a low-frequency local radio station could broadcast current information about the park. Videocassettes on tour buses could orient these visitors to the park.

Visitors need to be aware of the park entrance fee before they get to the ticket window. Possibly the fee structure should be changed to take into consideration the time of the visit and the extent of the experience (for example, the number of days visitors stay in the park). Park entrance fees should also be restructured to provide incentives for people to use mass transit.

Concessioners should be providing the correct park information to guests. The natural history association, concessioners, and the park should continue to work closely so that information is unified and not duplicated.

The Park Service needs to keep up with the ways that technological advances over the next 10–15 years may affect future planning. For example, people may be able to do more things from their cars (for example, phones and computers).

Information in the Park

As visitors arrive at the park, the amount of information given out should match the sequence of activities. The flow of information should be continuous, and it should overlap. Signs do not have to be large, but the messages must be simple, and they must be repeated three to four times to be sure that visitors register the information and have time to decide what to do. Signs need to be made of material that is reflective at night. The NPS sign system can be improved; however, caution should be exercised when deviating from published standards, since that opens the question of liability for accidents.

At the entrance station people should be told where they can get more information (preferably at the staging area). This routing should be quick, taking no more than 20 seconds. Visitors could be initially routed depending on whether they are staying for the day or overnight. For example, lodge guests could be directed to the hotel, while day visitors could be directed to a parking area that provides them with direct access to the rim. A simplified map focusing on the South Rim should be given to visitors at the entry so they can quickly see how to get to their destination. They should also be given a simple graphic explanation of the transit system. Vehicles could perhaps be routed to different parking areas based on size (that is, tour buses and RVs).

If waiting time at the entrance increases substantially, lanes could be allocated to specific purposes (for example, RVs, overnight guests, and tour buses could use separate lanes). Also, perhaps the airport shuttles could pay through a different system (prepay, permits, or vouchers). On peak days when traffic backs up at the entry, roving hosts should be available to hand out information and answer questions.

An in-park telephone information center should be considered so visitors do not have to go to an orientation center for information. Also information could be televised (channel 2 is an in-park channel designed for this purpose).

The entrance gate should be staffed 24-hours a day if a staging area with a transit system is developed.

Information for Visitors from Other Cultures and Countries

Because Grand Canyon is visited by a large number of visitors from other cultures and countries, a consistent sign system needs to be provided, using international symbols and few or no words. The symbols could be explained in map legends in various languages. (In Yosemite they have not had much success using just symbols, Disney World primarily uses words, and at Vail a symbol and a single word are used together.) Electronic and radio messages should also be provided in different languages.

Multilingual employees should be recruited by both the Park Service and the concessioners.

PARKING / STAGING AREA

At a staging area or transportation hub visitors should be able to park their cars, use restrooms, get additional orientation to the park, plan their activities, and make reservations. The workshop participants generally felt the parking / staging area / orientation center should be combined at one location, although dispersed parking areas with simple information kiosks were also discussed as a means of distributing visitors (for example, bus visitors, RV users, and day visitors with a limited amount of time to stay in the park).

Parking should be secure so that visitors can feel comfortable when leaving their cars. Visitors also have to be assured that efficient alternative means of transportation are readily available to them. Parking needs should be planned with careful consideration for the different types of guests, including overnight guests (campers, backpackers, and lodgers), day visitors, and bus tourists.

> *Overnight visitors* — Overnight guests could either park in the village near their lodging, or they could be directed to a secure, remote lot after dropping off their luggage at the hotel or lodge. They would then use the park transit system for circulation. Parking should be away from the rim (perhaps south of the train tracks), leaving the village solely as a pedestrian area.
>
> *Backcountry visitors* — Backcountry users could either park at a staging area and use park shuttles, or they could be allowed to park near the backcountry office or at trailheads.
>
> *Day visitors* — Parking for day visitors should be at a staging area / transportation hub, with frequent shuttles to popular destinations and direct connections to pedestrian and bike paths. Day use visitors in particular should be encouraged to leave their cars and have more direct contact with resources.
>
> *Tour bus visitors* — Tour buses could either be directed to a special parking area, with park transit facilities providing a link to the South Rim system, or they could be allowed to interface with the main transit system. Tour buses with overnight groups could unload passengers at or near their lodging and then park at a remote lot. If the staging area was within walking distance of the park transit system, buses could drop off visitors there, and diesel buses could be kept out of the village area altogether, and a separate shuttle could be provided for luggage. If feasible, tour buses should be kept away from the rim, even for loading and unloading passengers.

A Parking Lot vs. a Garage

Surface parking lots for automobiles are cheaper to develop than a garage-type structure (one vehicle space in a surface lot costs approximately $1,000; in a parking structure, $7,000–$10,000). Surface lots can also be designed for more flexibility, picnicking areas can be incorporated in the design, and the areas can be landscaped. Parking lots are more familiar to visitors, and they may be more compatible with a park setting. However, they disturb a larger area, adequate lighting may be difficult to provide and may intrude on night sky viewing opportunities, and paved surfaces result in runoff and increased erosion potential in surrounding areas. Also, the reflecting mass of cars could be intrusive from the air, and an extensive paved area would build up heat.

A parking garage occupies less area, therefore reducing the impact on the land, and it can also be designed to accommodate other facilities (restrooms, food service, retail space, reservation desks). A garage provides protection from the weather, can be belowground to reduce the visual impacts, and visitors have shorter walking distances. However, garages are expensive to build and maintain, and special designs are needed to accommodate oversized vehicles. If the structure is aboveground, it can be intrusive and inappropriate in a park setting if not designed with aesthetics and landscaping in mind.

To make a parking garage less intimidating to users, it must be well lighted, there should be ramps not spirals between levels, and access in and out should be easy (there should be multiple entrances and exits). At Vail the parking structure is built into a slope so that it blends in and provides more at-grade levels; landscaping around the structure makes it look less imposing.

Centralized Parking vs. Dispersed Parking

A centralized parking area would simplify routing visitors from the entrance gate. However, providing parking at one location would require a fairly large area to be disturbed (especially if it also served overnight guests), and a number of people would be concentrated at one location. Consequently, the area should also be designed so people are not channeled to one point on the rim, but are dispersed to several viewpoints.

If smaller multiple parking areas were provided, environmental impacts would be minimized at any one location, visitor use would be more evenly dispersed, and the areas could be brought into use as needed to meet demand. However, multiple areas would be more difficult to manage, some services would have to be duplicated, and visitors may have difficulty deciding which facility to go to.

The community of Tusayan could decide to develop a visitor staging area of its own. In that case the relationship with park facilities would need to be carefully coordinated.

ORIENTATION CENTER

As previously mentioned, the orientation center should be the central point for visitors to get information about the park, plan their visit, and access the transit system. At the Grand Canyon this facility should serve primarily an information function rather than an interpretive function, and portions should function 24 hours a day. An additional way to assist visitors would be to provide staffed satellite information kiosks near pedestrian ways so people would not have to return to the orientation center for information.

Concentrating information activities at the center would not necessarily result in congestion, since only about 15% of the day visitors arrive during the peak hour. Also, repeat visitors may go to other areas of the park and would not have to go through the orientation center.

One example of an orientation center that specifically meets visitor needs in an efficient and pleasant manner is the one in Charleston, South Carolina. This facility is centrally located and easy to get to, there is an information booth with a large map, visitors can watch a five-minute video about opportunities available in the city, and they can talk to people for help with specific questions.

Location

If possible, the orientation center should have a direct connection with the park's primary resource. At Grand Canyon this means that the center should be near the rim, which is what first-time visitors want to see first. It should be within walking distance from the parking area so visitors would not have to use the transit system, and it should allow for easy access to other facilities and activities, such as the rim trails. If the facility was within walking distance, people would more likely come back to the orientation center to make use of the various services. Such a location might also completely satisfy the needs of those visitors who just want to see the view from the rim and then leave. Drawbacks with a staging area near the rim include the potential for visual and environmental impacts at the rim.

If the facility was away from the rim, environmental impacts might be less severe; however, the structure might have to be larger to accommodate a full range of services. Access to the rim would be slower because visitors would probably not want to walk and would have to take the transit system. Consequently, a larger transit system would be needed, which would be more expensive to build and operate. Since people would not be easily able to walk to the rim, backup options for the transit system would be needed to ensure that visitors had quick and reliable access to viewpoints. Also, if the center was too far out, people would not likely come back to take advantage of the other services offered.

Functions

One of the primary functions of the orientation center would be to serve as a transportation hub where two or three transit systems would interface — for example, a tram system that goes just to the rim (if the rim is not within walking distance), a system that goes to other park areas, and a hotel/lodge shuttle. Orientation maps of the transit system should be available as handouts.

The orientation center should prepare visitors for their initial view of the rim, possibly with a short movie or a model. All primary interpretive themes should be introduced, but no one theme should be presented in depth; that level of interpretation would take place at satellite facilities in the park. The center should try to build visitor anticipation and spur interest in the prime resource.

Besides meeting basic needs (restrooms, fast food service, or vending machines), the orientation center should also provide trip planning services; an area for lodging check-in or preregistration, or for reservations (if people cannot get reservations in the park, there should be help getting them accommodations outside the park); plus an area to make reservations for campsites, mule rides, and restaurants, and possibly an area to get backcountry use permits.

Relief maps should give visitors an overview of the park, and the areas for the best canyon views should be identified (that is, people should know that they do not have to go to the village to see the canyon). Interactive videos could also be used to provide basic information and introduce the park's interpretive themes.

Information should be straightforward and based on specific needs. Signs, videos, or handouts should answer visitors most frequently asked questions, giving the staff more time to answer specific questions in person and to help people find the programs and educational information to meet their needs. People should have something to look at or do while they are waiting in line. Itineraries should be suggested for visitors based on the amount of time they can spend in the park (one, two, or three hours, or one or two days). If lines form on peak days, hosts should talk to visitors and assist them while they are waiting.

So that the facility is not overloaded and oversized, only those services required by a majority of visitors should be accommodated. Other services that could be appropriate are a lost-and-found area, a cafeteria, a retail shop, kennels, bicycle rentals, wheelchair and stroller rentals. Services required by a small percentage of visitors could be at satellite locations (for example, pet kennels).

Satellite orientation centers may need to be established to orient people arriving by train or entering the park at Desert View. (Visitors at Vail are distributed by means of a visitor center at each major parking facility.)

Design

The orientation center should have a unique design, perhaps selected through a national design competition. It should be spacious, laid out to easily meet functional needs, and designed so that most visitor questions can be answered by graphics and information displays.

VISITOR TRANSIT SYSTEMS

Shuttle System

Options that were most discussed include a fixed-guideway system or a bus/tram system; fixed rail would probably not be financially feasible at the Grand Canyon unless special funding was available through the Federal Transit Administration. The park would be an ideal test location for various transit systems because of its linear layout (for example, monobikes — bikes on a fixed guideway). Careful consideration of the benefits of fixed-guideway options in relation to the substantial costs, lack of flexibility, and potential visual intrusion would need to be considered.

To minimize capital costs and to fit in with the park environment, an on-grade bus system would be most appropriate, perhaps a tram system where additional vehicles could be added for use on peak days (a capacity of 4,500 to 6,600 passengers per hour would be needed). The system would also need to be designed for operation in bad weather (buses or vehicles that could provide protection from the wind, snow, and rain).

Whatever transit system is selected, it must be designed to fit in a national park setting. It should provide rapid access to various destinations, as well as being clean, nonpolluting, quiet, attractive, recognizable, easy to get on and off, and accessible to visitors with disabilities. The main system must provide frequent service (every 5 to 15 minutes), and it should be designed with a reserve capacity. It should also be relatively low cost to operate and maintain.

Vehicles should have space for bicycles, daypacks, and other bulky items that visitors bring with them. For longer rides the vehicles should be more comfortable; but for shorter rides, they can be less comfortable. At Disney World they have found that if the ride is less than 20 minutes, people do not mind standing; but for longer rides passengers must be able to sit down. (Disney uses hard seats because the rides are short and the hard seats are easier to maintain.) All vehicles must be accessible to visitors with disabilities, and the system must meet all requirements of the Americans with Disabilities Act.

If the transit system is optional, it should be efficient enough so that it would be quicker and more convenient for visitors to use than private vehicles (for example, exclusive lanes for shuttle vehicles should be provided so that cars will not clog the system). The advantages of using the transit system should be made obvious to visitors so that people are encouraged not to use their cars. Restricting parking in the village would further encourage people to use the transit system.

At each transit stop there should be information about the system and a method to get people to line up (once people get started lining up, everyone falls in). Information, audiotapes, or interpretive videos could be shown on the vehicles to tell people more about the park.

Desert View should be carefully planned to fit into the overall South Rim transportation system. One consideration might be to provide one-way traffic eastward from Desert View and tying into the parallel Forest Service road just to the south.

Bus Tours

The concession bus tour system should be on a reservation system, with users paying a fee. Buses should be more comfortable than shuttles, and specialized tours could be offered (sunrise, sunset, etc.). Tours could depart from the staging area, with selected stops to pick up additional passengers.

Commercial bus tours could be allowed to use the park transit routes, with guidelines to make them blend in with the system, as long as the vehicles were nonpolluting and quiet. In this case the routes would need to be planned to handle this additional capacity. Another alternative would be to restrict commercial buses in certain areas, for example, they would not be allowed in the core village area, on the West Rim, or at some overlooks. The other possibility would be to have operators bring passengers to the staging area where they could get on the park transit system or the park concessioner's bus tours. In that case, the park and concession transit systems would have to be able to handle commercial tour bus passengers.

If commercial tour buses were allowed to use the park transit routes, guides (maybe concession personnel) could provide park orientation for passengers. If it was decided that buses could not be incorporated in the park's transit system, the entrance fee for buses could include a cost for using the park transit system. Independent tour bus operators should be asked to participate in a park orientation program, and commercial use licenses should be required for tour bus operators (about 100+ operators at present).

Pedestrian Paths and Bikeways

Separate lanes or paths should be provided for bicycles and pedestrians; however, if traffic volumes were significantly reduced through the use of a park transit system, then designs could allow for bikes and transit vehicles on the same road. Paths and bikeways should be easily accessible. The bikeway system should be well designed, provide an aesthetically pleasing ride, have clear and simple signs, and link major destination areas. Bike paths should not be allowed near the rim because of conflicts with pedestrians and safety hazards. The village should be considered a purely pedestrian area.

Bicycles could take some of the load off the transit system.

Electric carts or three-wheel bikes could be provided for the elderly,

INTERPRETATION

One of the strongest recommendations of the workshop was the absolute need for adequate funding for state-of-the art, high-quality interpretation, and there should be a greater emphasis on personalized forms of interpretation.

The workshop participants recommended that the park orientation center function as a visitor center, where visitors would be introduced to the interpretive themes highlighted in the park. However, in-depth interpretation would take place at satellite education centers or museums focused on a particular topic. While some themes can be handled anywhere, others are specific to one location.

Focused Museums or Education Centers

In-depth information on interpretive themes should be provided in separate museums, especially in the village (for example, the powerhouse or the mule barn). When choosing the themes to be presented, interpretive planners should consider the area, natural and cultural history, the specific resources, and what a structure represents in terms of park development or an architectural style. No additional development should be put in the village area. Existing structures should be adaptively used for museums and satellite interpretation.

Museums should be simple and focused; this is especially true for small facilities such as the Yavapai and the Tusayan museums. Because of its prime location and overwhelming views, the Yavapai should maybe be used simply for observation, and much or all of the exhibits and sales area should be removed (the interpretive exhibit on the canyon's geology is possibly too academic for this location). When the existing buildings are small and interpretive topics are oriented to natural resources visible onsite, such as geology, then outdoor interpretive exhibits should be considered, even if they are fairly complex. Sales areas should be associated with the focused museums, but they should specialize in items related to the exhibits to further enhance people's interest and to educate them (this technique has increased sales markedly for the Smithsonian).

A focused museum on Native American archeology and history should be done in cooperation with Native Americans.

Personal Services Interpretation

As one of the most recognized symbols of the National Park Service, interpreters need to be more visible and more involved with visitors. Interpreters should go out to meet people and give impromptu interpretive programs since 10% or less of the visitors attend scheduled programs. The village area at noon or in the early evening is a perfect time for these brief programs since many people are already there.

Appropriate subjects for interpretation in the village area would include the national historic landmarks in the park, why not to feed the wildlife (for example, in the plaza outside the Bright Angel Lodge), the significance of the Grand Canyon as part of the national park system, and issues and threats to park resources. More personal interpretive programs would do a lot to build a constituency to support the parks.

Interpretive programs should present educational information in a way that captures and holds an audience's interest. The programs should be varied in substance and approach to reach all types of visitors, regardless of age, interests, or knowledge. Spontaneous programs could also be used as a lead in to more traditional scheduled programs. People should be able to ask the interpreters questions, even about things in the scheduled programs.

The amphitheater should be used for a variety of programs, as well as historic structures within the park, such at Kolb Studio or the power plant. For example, programs on Native American folklore could be provided, with presentations by Native Americans. Also more varied winter programs should be provided, perhaps indoors.

Both general tours and special highlight tours could give people a better appreciation for the park. For example, most people who take part in a guided tour or performance at the Smithsonian Institution develop a sense of pride and are more protective of the exhibits.

Volunteers could be used more extensively to augment the interpretive program, and short, spontaneous programs would provide good training for volunteers. Special workshops could be held for volunteers, and volunteers could either specialize in one area or diversify. This would help provide a reserve base to help meet future needs. Volunteers are one means to help support park staff; volunteers should not be used to replace park interpreters.

Interpretation by Concession Personnel

NPS interpretive training programs should be provided for all concessioner employees who come in contact with visitors. Some suggested a minimum of three days, while others said it should be much more extensive, with a full-time training director, since more visitors are likely to meet concession employees than NPS employees. Currently, employees of Grand Canyon National Park Lodges receive one day of training and only one hour of NPS training.

Programs for Visitors from Other Cultures and Countries

Interpretive information could be provided through multilingual voice packs, videos, and booklets in various languages (available at the orientation center) that are keyed to interpretive wayside programs. Waysides should be as visual as possible. Taped programs could be provided for bus tourists as well as car tourists. Publications should be provided for non-English speaking visitors, and multilingual interpreters should be part of the staff.

Low-power FM stations, with a limited range, could also be used, and visitors could be instructed to tune a receiver to a certain frequency so the broadcast message would be picked up as people move into range of the transmitter (Carlsbad Caverns National Park has 19 separate messages that can be picked up by handheld receivers). The Smithsonian Institution is experimenting with plastic cards encoded with a computer chip for a specific language; the card is inserted into an audio player for the interpretive message. This system allows special programs in up to nine languages.

VISITOR SUPPORT FACILITIES

Food Service

A diverse food service, ranging from fast food to fine dining, is important; also different kinds of foods should be offered, particularly foods that relate to certain aspects of the park's cultural history (for example, Native American foods). Facilities need to be able to accommodate crowds in a relatively short time. Currently, the number of food service establishments is inadequate, and visitors must often wait for up to an hour and a half to be seated for dinner, even at the restaurants with a faster turnover, such as the Bright Angel family restaurant.

Probably the most efficient type of eating establishment for large numbers of visitors is a scatter-type cafeteria (where people go to different areas to get different items and then pay at a central checkout point). This is the type of operation at the Maswik, and various designs work well (the Maswik's design also allows it to be converted to a sit-down restaurant). These cafeterias require less staffing, which in turn reduces the pressure for additional employee housing.

Food courts are also popular, and this type of facility could be considered at the Yavapai Lodge and maybe the former powerhouse, which is in a good central location. (A food court or cafeteria at the powerhouse could also be combined with an orientation center for rail passengers).

For a more entertainment-oriented experience, historic dining cars could be put on the railroad, with staff dressed in period costumes to take advantage of the historic scene. Visitors could pay a set amount for each person, but they could order off a menu with food items and prices from the turn of the century.

Snack bar and deli options are also appropriate and should perhaps be increased.

Vending carts and machines could be used to increase serving capacity during the peak season. Fast-food items as well as healthy alternatives could be provided. The carts could be themed to fit into the environment and placed so they do not detract from canyon views or the integrity of the park. Water or vending carts that stock healthy foods for hiking could be stationed at major trailheads. The way many fast-food items are packaged results in greater volumes of trash. Means to reduce the trash need to be implemented. Also, trash receptacles should be strategically placed wherever people gather to eat.

Food service for bus tours can be a problem when buses show up without reservations at a peak period. Since the surge problems primarily affect the concessioner, efforts should be made to contact the tour group operators to get them to make prior arrangements. Issuing commercial use licenses or providing park orientation programs for tour operators (with incentives for them to participate) are ways to get this information out. Bus tours could also be encouraged to eat in Tusayan, which would require working with the local business operators.

Box lunches could be provided at desirable locations (for example, at certain overlooks), but they are time-consuming to prepare, take up refrigerator space and storage, and could lead to more trash in the park.

To reduce waiting times at restaurants, special meals at lower prices could be offered during slow periods to distribute use. Better information should be provided in the rooms about eating opportunities. This information needs to be obvious, not hidden in a guidebook, and guests should be told about possible waits.

Interpretive talks could also be offered while people are waiting for dinner tables (this is done successfully at Pier 39 in San Francisco). Grand Canyon National Park Lodges could also use spaces near their restaurants to provide interpretive displays for waiting customers.

Hours at the deli and grocery stores should be extended, especially for international visitors who are accustomed to eating later and for visitors who want to enjoy the sunset before eating.

Visitor Experience back from the Rim

Expectations of visitors staying in lodges away from the rim may not be as high, but the experience should be as high as that on the rim. Lodging facilities in national parks should offer something special, and the room itself should add something to that experience. Lodging areas should have a consistent theme that extends to all facets of the experience.

More and better trails to the village and the rim should be provided. The trails should be lighted adequately for visitor safety, and directional signs must be easily understood.

There is virtually no emphasis on the experience away from the rim at Grand Canyon. To take advantage of this part of the park, loop trails could be provided through the forest so people can enjoy the solitude off the rim. Picnic areas could also be developed where interpreters could provide impromptu talks.

Informal programs should be provided in lodging areas, in addition to the amphitheater. Activities and programs need to be provided for children and families in the evening, for example, nature movies at the visitor center or other easily accessible places. Possibly a fitness facility that could be used by guests and employees could be provided. However, things like swimming pools and arcades may not be suitable and appropriate in a national park. Everything should contribute to a park experience, based on the management objectives, as well as the purpose and significance of the park.

Retail Shops

There should be a diversity of shops, offering a range of goods and prices, but overcommercialization should be avoided. Better quality items should be sold, and perhaps a Nature Company type store that sells goods with an environmental theme would be appropriate. Shops should also emphasize recycling and a concern with the environment in packaging and sales items.

Native American handcrafts and souvenirs are also important, and art demonstrations (for example, Navajo rug weaving) could be provided. If space allows, a fine arts facility relating to the Grand Canyon might be appropriate and could be both educational and enjoyable (for example, like the Ansel Adams gallery in Yosemite).

Souvenirs should reflect the park and the region, and they should be made in the United States whenever possible. Souvenirs should have educational and interpretive values associated with them. Possibly vending carts could be provided for souvenirs and gifts. People also like to do most souvenir shopping at the end of their visits, so having a gift shop at the staging area / orientation center would be logical.

Strong ties between the concessioner and the natural history association should be encouraged.

Some retail spaces are too small to be effective. The Hermits Rest facility and Desert View watch tower may be more suitable for other uses (for example, interpretation, with an emphasis on relaxing and viewing the canyon).

ESTABLISHING PARAMETERS FOR THE VISITOR USE EXPERIENCE AND MANAGEMENT

Workshop participants discussed a number of ways to determine what quality visitor experiences are, as well as what management practices could ensure those types of experiences are provided. The quality of experiences may or may not relate to the number of visitors in the park. Besides the number of people, perceptions of crowding are also affected by what other people are doing (for example, noise, intrusive behavior, waiting in line, seeing litter, and traffic congestion all lead to a feeling of crowdedness).

The alternatives developed for the Grand Canyon could significantly change the carrying capacity for the South Rim. For example, removing cars from the village would open up large areas for pedestrian use, while keeping cars in the village significantly reduces the number of visitors that can be handled. Also, a highly effective mass transit system could help increase the visitor capacity, as would a more efficient food service.

The workshop participants had different views of the present visitor experience at Grand Canyon. Some participants believe that sections of the park (for example, some park trails) are already being used to capacity and that steps should be taken now to reduce use and preserve a quality experience. Another participant was prepared for a very crowded experience and was surprised not to see people standing five deep all along the rim; to him the main problems at Grand Canyon are signs, parking, and food service. The following question and answers reflect how the workshop participants would address problems related to providing high-quality experiences for visitors at Grand Canyon.

How do you know when a visitor experience is no longer a quality experience? How would you know, for example, if the capacity on the West Rim is being exceeded? How do you set standards for the quality of the visitor experience?

- Look at undercapacity situations and observe what people do. Count the number of people at overlooks at certain times and develop a data base. Measure the linear feet of viewing area and what could be added in the future. The West Rim already has self-controlling areas (people tend not to stop at areas that are already crowded), people do not have to stop at every overlook. People who want solitude are usually willing to take the trouble to get away. Maybe at secluded areas you provide more square feet per group. Also, repeat visitors will figure out other areas to go.

- Determine a theoretical capacity, and experiment. If the capacity is too high, change the capacity in standard operating procedures. Determine when a capacity becomes uncomfortable or reaches a maximum level by monitoring the situation and interviewing people to find out what they think. Once you have a theoretical capacity, back off from that to establish the desired experience. A peak day is an ideal time to do surveys. If the surveys are well structured, you can make visitors feel they are helping with the solution.

- Crowded conditions may or may not be part of the expectations of people. Set up opportunities for each type of visitor (based on the sensitivity level of visitors), and design and manage opportunities for that group of visitors. Provide opportunities for everybody — from first-time users to repeat visitors. The problem is that as visitor numbers build, diversity begins to disappear, and all areas gradually become developed. Manage for various types of experiences, otherwise diversity will eventually be lost. However, if you keep a standard level of experience, then ultimately you get into controlling the number of visitors. At Grand Canyon visitors have alternatives, such as the North Rim, where the experiences are different.

- Quantify the capacity of each facility in terms of visitor density, congestion level, and comfort. Measure demand and look at the relationship with capacity. This needs to be done on an ongoing basis; continually look at how guests use facilities and the impacts on circulation patterns. If a facility is not being used to capacity, then decide why and alter the situation as desired. Design parameters are different for different areas. For example, outside circulation areas may require 40 to 50 square feet per person in order to provide plenty of room for people to circulate. Inside spaces, like an exhibit area, may require 25 square feet per person; if only 15 square feet per person is available, then the space will be congested.

- Look at what is happening simultaneously at various areas — the entrance gate, parking areas, Mather Point, the village, the West Rim Drive, etc. Also ask visitors value-type questions (entrance fees, value of lodging). Do capacity studies for the peak day and a design day.

- Surveys and focus groups are important in understanding human comfort. Walt Disney Company starts using focus groups at the beginning of a development planning process. They select a group, ask them questions about specific problems and perceptions, and give them free entrance tickets to compensate them for any inconvenience. Daily surveys are used to determine the comfort level of visitors, and it is a continuous effort. The model Disney has is a working model that is constantly adjusted and modified to incorporate new information. Establishing a working data base is very important. This information should be flexible and easy to change in response to more and more information and knowledge of comfort levels.

What are some mechanisms that work in guiding, distributing, and limiting visitor use?

- Offer special rates, discounted tickets, and tour packages to distribute use throughout the week and the year. Get people out of cars and onto a transit system or bikes.

- Decide what to do to distribute visitors on peak days and to make operations more efficient. Use roving hosts to answer questions, increase the number of shuttles, perhaps close some areas to additional use until visitors leave. At Disney World they figured out a total theoretical capacity based on all park facilities, and then built parking facilities. When the parking areas are filled, the park is closed for a few hours, and people are told they can come back later in the day, and park hours will be extended. Visitors are given suggestions of what they can do in the meantime. If a theoretical capacity was reached on the South Rim, it would probably be for a few hours in the middle of the day, so people could come back later that day. Visitors could be distributed to other regional areas.

- Establishing a true carrying capacity requires good data, and the ability to relate the data to different density levels. Watch for patterns and educate visitors. The more you study, the more you learn. Survey all different types of people to get a true sampling of opinions, including displaced visitors.

- Undertake a monitoring and survey system once any significant changes are implemented.

- The perception of crowding is a complex issue. Perceptions change through time — what is crowded today at Yosemite or the Grand Canyon may not be significant to the next generation. Perceptions are conditioned by times and circumstances. International visitors, especially the Japanese, are used to more crowded conditions. Those who live in major cities have different expectations, and there may be a greater desire to get away from urbanization and to visit wilderness areas. However, the realization that people are becoming more tolerant of crowding should not be used as a basis for changing standards.

- Establish capacities for each component of the park experience. When demand exceeds capacity, consider a control policy for that component. Also consider how much capacities can be exceeded, for example, on the West Rim. If people see a half hour line and leave, then a natural control has been achieved. When demand exceeds capacity, then manage and spread the demand. A reservation system may be appropriate; however, using a reservation system only half of the year may not be worth doing because of the expense to institute the system.

- Grand Canyon may be getting close to capacity on portions of the Bright Angel and Kaibab trails. Some situations need to be surveyed now, and management attention focused. Phase-in a level of control, with the final control possibly being to close the gate. (At Yosemite trailhead quotas were developed after an eight-year study to limit resource impacts.)

APPENDIX A: SUCCESSFUL APPROACHES TO MANAGING VISITOR USE

The workshop analyzed ways to provide a high-quality visitor experience from both practical and theoretical points of view. On the practical side individuals knowledgeable about the resort community of Vail, Colorado, the Walt Disney Company attractions, the Smithsonian Institution's Museum of American History in Washington, D.C., and the National Aquarium in Baltimore, Maryland, shared their perspectives on dealing with large numbers of visitors. While the visitor experience at these sites is generally controlled in terms of design and layout, great efforts are taken to provide visitors with a quality experience. Information is provided in concise and useful ways, mass transit systems may be used to move people quickly and cost-effectively, and visitor surveys are used constantly to find out what people think, to determine trends in visitor use, and to ask for suggestions about how to improve the experience.

On the theoretical side ways were presented to measure the degree of visitor satisfaction and the extent of visitor use impacts on natural resources. This process seeks to define standards for a desired visitor experience and to measure impacts against indicators that will show when visitor use is irreparably damaging resources or when perceptions of crowding destroy visitor expectations for a quality experience.

While the various methods for managing visitor use differ, the goal that all of the workshop participants share is the desire to provide the highest quality visitor experience possible.

PLANNED RECREATION DEVELOPMENTS

The resort community of Vail, Colorado, and the Walt Disney Company facilities around the world are areas where the visitor experience has been studied in detail and painstaking efforts are taken to fully meet visitors' expectations. All aspects of the visitor experiences are coordinated, from giving arriving visitors critical information, to providing public transit systems to efficiently get people where they want to go, to suggesting opportunities for visitors to make the most of their experience.

Vail, Colorado

Peter Patten, David Evans and Associates, Inc.; Vail's former director of planning

Vail was conceived as a small resort, but the construction of I-70 made it a day ski area for the entire Colorado front range, and it has also become a major summer tourist area. Designed to be reminiscent of a Bavarian town, Vail has adopted design guidelines to ensure that all future development will compliment this architectural theme.

Vail is built for pedestrians. The concept is to get people out of their cars and to encourage them to walk. The center of the village is for pedestrians only, and retail areas are concentrated along the walkways from the main parking structure to the ski lifts. A free shuttle system links all parts of the valley's developed area, and a complete recreation path system is also offered. This concept works well, and each year Vail hosts some 1.3 million skiers (21,000 skiers on the peak visitor day) and some 500,000 summer visitors.

Transit System. In terms of planning, the most problematic visitor is the day visitor who has a car. Since no cars or buses are allowed in the village, arriving traffic is directed to one of two main parking structures that are linked by a shuttle system. In addition, outlying parking areas provide overflow parking, with cheaper rates at these lots to help distribute use. Because it is close to Vail Village and there is no need to take a shuttle, the main parking garage is the most popular.

The Vail transportation center at the main parking garage is the transit hub for the area, and it is the key to distributing visitors. A visitor center on top of the structure orients people to Vail and the surrounding areas, the transit system, and other amenities. From here visitors can either walk to the ski lifts (a distance of about 1,500 feet) or take the shuttle to other parts of the village.

The free shuttle system runs every five minutes along the outside edge of the village, and visitors can easily walk to their destinations after getting off the shuttle. In some areas shuttles travel in separate bus lanes that are gated to prevent cars from interfering with the transit system. In addition to the local shuttle buses, there are more than 150 private shuttle buses that are run by the various lodges and condo associations. These buses have their own circulation routes that are separate from the town shuttle routes and do not intrude on the village's pedestrian areas.

Visitor Information. One of the most important information sources is bus drivers because they are the most accessible to people. Consequently, training is provided for all bus drivers, as well as other employees, so they can answer basic questions. In addition, hosts are stationed throughout the village to answer questions and give directions.

Sign System. Vail has implemented a comprehensive sign program. The first information is given at Stapleton International Airport in Denver; then highway signs outside Denver start giving the mileage to Vail. Signs are also posted on Vail Pass, which is 20 minutes away from the town. There are three exits off I-70, and for people who take either the east or west exit, frontage road signs tell them how far it is to parking and information.

Within the village signs point the way to major facilities and are placed on light poles and specially sculpted wooden posts. Facility names and graphic symbols, rather than street names, are used because they are easier for visitors to remember.

Walt Disney Company

Keith Kambak, Vice President of Resort Recreation; Al Shacklett, Manager, Industrial Engineering

One of the elements that makes Walt Disney Company's theme parks so successful is the attention to detail, and the fact that design themes are carried through from castles to popcorn stands and trash cans to costumes. Walt Disney's philosophy is to concentrate on giving guests a great experience, and they have found that people would rather pay more money for a quality experience, than less money for a poor experience. Visitors are intentionally referred to as guests, underscoring the company's service-oriented philosophy. Employees are part of the show; they are referred to as cast members, not employees; they wear costumes, not uniforms. The intent is that all people should blend in and be part of the show — it takes people to make the dream a reality.

Disney World in Orlando, Florida, encompasses 30,000 acres, with an 8,000-acre environmental protection area. The major elements at the park are spread out to disperse visitors and to minimize the feeling of crowding, and all areas are connected by a transit system. The park has 35 million visitors annually, with about 200,000 people on the property on peak days. Resort-type hotels on site offer 10,000 guest rooms.

Initial Visitor Orientation. Guests who make hotel reservations are sent a 30-page guide to help them plan their visit; they are also advised that they must make reservations for certain events.

For people driving there are Disney welcome stations on the interstates, and a lively and carefully designed sign program. Information on the signs is kept simple and is given to guests as they need it. At the toll plaza the goal is to keep each transaction time to about 60 seconds. Friendly, outgoing people are used to create a good initial impression on visitors.

Parking/Transit Systems. Disney World has 50,000 parking spaces, including a 12,000-car main parking area at Magic Kingdom and a 12-000-car area at Epcot, plus a 5,000-car parking area at the Disney/MGM theme park. Each park area also has its own parking lot for handicapped visitors. The majority of parking is day parking. The facilities are staffed by specially trained attendants who guide each visitor to a parking space, and 3,600 cars can be parked an hour at Magic Kingdom and at Epcot.

When the parking capacity is reached on extreme peak days, the park is closed for a few hours during the day (efforts are made to minimize closures). During this time, alternate activities are suggested, and people are told when the park will reopen (usually later in the afternoon; if the park is closed for a period during the day, then it stays open later at night to give everyone the same opportunities).

An internal transportation system is essential to Disney World, and it runs frequently so that people can rely on it to get to any destination quickly. After visitors park, the goal is to get guests onto the tram system and inside the park within a half hour. (The park is 15 to 20 minutes from the parking lots.) A monorail also runs from the parking area and by the hotels, with hotel guests having priority access. If visitors want to go to another part of the property (e.g., to Epcot), they are encouraged to use onsite transportation rather than taking their cars.

The transportation network has 140 buses (there will be 200 in five years; currently 50% of the buses are accessible to disabled visitors, and all will be accessible in the future); there are also 12 monorail trains and 20–30 trams. The transit budget is about $38 million, with 80 million users annually. The transportation system is free, with the cost included in other services (e.g., in entrance fees or hotel rates, so that guests do not feel that they are being nickeled and dimed to death). Shuttles are operated every 15 minutes, and there is a reserve capacity to add more shuttles if needed. Because transportation systems are expensive, it is important to figure out the balance between cost, comfort, and service.

Visitor Information. Hosts are stationed throughout the park to answer questions and to make suggestions about what to see. Because a pleasant, helpful host or hostess can set the tone for an entire visit, all employees are fully trained about park operations so they can answer questions. Employees are expected to do everything they can to make sure guests have a pleasant experience, from beginning to end.

Inside the park the visitor experience is essentially very controlled, but instead of being told where to go, guests are given suggestions. For most attractions the goal is not to have people wait in que lines longer than 15 minutes; however, for the more popular attractions the wait may go up to 30 or 45 minutes, and in those cases entertainment is provided to optimize the guest experience; signs are also posted so guests know how long the wait will be.

Measuring Visitor Satisfaction. Guest surveys provide ongoing empirical information — how many people arrive, how long they wait, how many people move from place to place. These data are critical for future planning, and models have been created to show how people move through the park. Parameters have also been developed to determine capacity: museums, 25 square feet per guest; ticket booths, 60 second transaction time; walking paths, 3.5 linear feet per 1,000 hourly guest flow. As new projects are developed, feasibility is tested through market research, annual attendance projections, seasonality analysis, design day attendance, and in-park attendance. A critical factor at every step in the development process is management intuition to review how well something will work.

Utilization studies are done on a seasonal basis for the park as a whole and for special purposes. Price/value surveys give guests a chance to rate their stays on a scale of 1 to 10 relative to the price they paid, and managers try to keep the ratio in the range of at least 8 to 8.5. (If some aspect of the visit receives a low rating, then either the price is too high or the experience needs to be improved; if something receives a 9 or 10 rating then it may be possible to slightly raise the price without affecting the quality of the experience.)

STRUCTURED VISITOR EXPERIENCES

At the Smithsonian Institution's Museum of American History in Washington, D.C., and the National Aquarium in Baltimore, the visitor experience is more focused than at Vail or Disney World, but in different ways. The museum has concentrated on revamping exhibit areas to achieve a better flow pattern and visitor experience, while the National Aquarium has had to limit the number of visitors in order to ensure a high quality experience.

Museum of American History, Smithsonian Institution, Washington, D.C.

Michael Carrigan, Ph.D., Assistant Director, Director of Exhibitions and Public Spaces

The Smithsonian Institution's Museum of American History has between 6 million and 7 million visitors annually, and visitor use has increased by up to 30% this year. The major audience is between 18 and 40, and local visitors come back 9.5 times a year. The museum is undertaking a complete redesign and reinstallation of the exhibit area to improve the visitor experience and to provide a wide variety of areas for people to look at exhibits, eat, and relax.

The museum has three floors, with 150,000 square feet on each floor. Spatial psychologists and sociologists were brought in as consultants to assist in the redesign. A basic travel plan was defined, and public spaces along the traffic corridors give people places to rest and relax. Because people come feeling that they already know about American history, the exhibits are designed to build on that feeling. Large, thematic exhibits are highlighted by special study areas that offer more detailed information about a related topic. Each exhibit is treated as a separate area, with a definite beginning and end so that people will clearly know when one exhibit has ended and another is beginning. The museum also provides films, lectures, demonstrations, and interactive exhibits (which are only used as an educational tool and not as exhibits in and of themselves). The exhibits are designed so that they provide an educational experience at all levels and so that they will appeal to multiple users with diverse interests.

As an element of the redesign, the museum has implemented a major graphic and sign system (with simple signs and icons) and large, thematic exhibit areas.

To get visitor feedback, surveys are done continually, occasionally in the middle of activities, with interviewers asking an array of questions. The museum has never closed its doors, but at peak times the patio doors are opened for more visitor space (for example, in summer 10,000 lunches may be served, and the patio or a second room can be opened for extra space). The public address system is used to announce activities in other parts of the museum to help distribute visitors.

The museum is involved in the immensely popular American Folklife Festival, which takes place on the Mall for two weeks over July 4th. With up to 1.2 million visitors, one of the problems is moving people around. Scheduled activities are carefully placed throughout the whole area (performances, crafts, workshops) to try to pull audiences aside, disperse visitors, and control crowds.

National Aquarium, Baltimore, Maryland

Chuck Spliedt, Admissions Coordinator

The National Aquarium was designed for 600,000 annual visitors, but on the average it receives 1.5 million visitors. The aquarium has a linear flow pattern, with an optimal capacity of 225 visitors at one time, and a daily capacity of around 7,700 (the capacity is based on fire and safety codes, as well as experiments to find the optimal number of visitors). This linear flow pattern means that the visitor experience is very structured, and people have little choice about where to go. It takes approximately 1 hour 15 minutes to tour the aquarium. To move people through the aquarium galleries, there is a bright picture at the end of each gallery, which tends to focus people's attention and to draw them through.

In December 1990 the opening of a marine mammal pavilion with a 1,300-seat amphitheater was scheduled, and plans were developed to evaluate and implement visitor traffic patterns before the addition was opened. The opening of the pavilion created a number of problems. First, the amphitheater's pulse movement style design (where a crowd gathers for a show) conflicts with the linear flow pattern in the aquarium; second, use of the pavilion is limited by when shows can be scheduled.

To meet these constraints, a new computerized ticketing and entry system was developed, and visitor surveys played a major role in determining the best ticketing operation. There were five objectives:

(1) minimize visitor wait time to get an entrance ticket and the information needed to enter

(2) give visitors only the information they need in order to enter and start their tour

(3) maximize the capacity in both the aquarium and the marine mammal pavilion without sacrificing the quality of the visitor experience

(4) recognize the needs of the ticketing staff in implementing the new system

(5) make the new system flexible enough to be easily changed

Visitors purchase tickets outside the aquarium, where they wait in a covered area, with a maximum wait of 15 minutes (longer waits were found to decrease visitor satisfaction). On peak days admissions representatives are stationed outside the ticket windows to take orders and answer questions, so cashiers only need to process ticket orders and not answer questions. While people are waiting in line, short audio messages give them important information. When visitors get their tickets, they are instructed when to come back, and they are also told whether to go through the aquarium first or go to the marine mammal show (about 75% see the aquarium first, 25% the mammal show first). People are told about nearby attractions they can visit while waiting to get into the aquarium.

The total number of available tickets is based on the number of mammal shows, prearranged group tours, and exhibit changes or refurbishment. Tickets are generally sold out in the morning, and group sales are limited. Advance ticketing is offered by mail; a telephone information system tells people the best times to come and admission procedures. Complaints are tracked through the admissions desk or members desk. No refunds or exchanges of tickets are offered; although people can sell tickets to other visitors. It is not known how many visitors are turned away. To help distribute visitation, coupons are offered during the shoulder seasons.

The computerized ticketing system has made the aquarium more efficient (7,700 average ticket sales with computers compared to 5,700 before), and there are 157 peak days a year. The staff knows what days to plan for, and exhibits that will slow down visitor flow are closed, school groups may not be allowed in the auditorium on peak days, and different activities are planned to distribute visitors.

Zip code surveys are used to find out visitor statistics. These surveys help track changes in the audience, i.e., where visitors come from (the greatest number are now from Pennsylvania). This information is used to plan exhibit changes.

The aquarium gets 50–60 tour buses, and up to 100 buses for school groups, per week. There is a bus dropoff point for Baltimore's inner harbor area, and car parking areas are offsite. The city is well marked for parking, with green and blue signs for visitor attractions.

THE VISITOR EXPERIENCE: MEASURING QUALITY AND IMPACTS

Several professionals have developed systems for measuring carrying capacity in park areas. Nearly all of these studies have focused on backcountry management, often dealing with passive uses. Several different processes for establishing carrying capacity have evolved, including limits of acceptable change (LAC) and the visitor impact management (VIM) system. These systems and how they can be used are discussed below.

Carrying Capacity in the National Parks

Robert Manning, Ph.D., Professor of Natural Resources, University of Vermont

Rising demand for public access to national parks like Grand Canyon has raised concern over the protection of significant natural and cultural resources and the quality of the visitor experience. The question of how much and what type of public use is appropriate in a national park is often framed in terms of carrying capacity. However, applying the concept of carrying capacity to national parks has proven more difficult than originally envisioned.

Management and research experience with carrying capacity suggests that it cannot be applied in the absence of management objectives. Management objectives describe the degree of resource protection desired and the type of visitor experience to be provided. Contemporary carrying capacity frameworks are built on an intellectual foundation of formulating management objectives and giving them operational meaning by defining indicators and standards of quality. Indicators are measurable variables that define the quality of park resources and the visitor experience. Standards specify the desirable or acceptable condition of indicator variables. Carrying capacity determinations are made by monitoring the condition of indicator variables. When indicator variables do not meet the standards that have been set, carrying capacity has been exceeded and management action is needed.

Several carrying capacity planning processes have recently emerged from the scientific literature, including limits of acceptable change and visitor impact management. These frameworks provide a rational, structured process for establishing carrying capacity that combine research-based data with informed management judgments. In addition, the National Park Service is currently refining and applying a closely related process called visitor experience and resource protection. All of these processes focus on formulating management objectives through defining indicators of quality for resource protection and the visitor experience and setting standards for these indicators.

Carrying capacity must not only be determined, it must be managed as well. A wide array of visitor management practices can be applied to carrying capacity. Limitations on visitor use may well be necessary to manage carrying capacity in some national park areas. However, other management approaches are possible and may be preferred where feasible. In particular, research on crowding suggests several management alternatives to carrying capacity that do not necessarily require limitations on the amount of visitor use. These include use redistribution; information and education programs designed to ensure that visitor expectations are realistic, guide visitors to appropriate park opportunities, and encourage appropriate visitor behavior; zoning park areas for relatively homogeneous groups of visitors; restricting visitor activities that have high environmental and social impacts; and more efficient and effective design and management of visitor facilities and services.

Visitor Impact Management

Alan Graefe, Ph.D., Associate Professor of Leisure Studies, Pennsylvania State University

Pennsylvania State University has been working with the National Parks and Conservation Association for the past 10 years to determine carrying capacities in national parks. This process has involved a review of literature (since the 1960s) and a synthesis of information; then a methodology for determining carrying capacity was defined. To downplay the term carrying capacity, the process was renamed visitor impact management.

Five major considerations are critical to understanding the nature of recreation impacts:

(1) impact interrelationships — there is no single predictable response of natural environments or individual behavior to recreational use

(2) use-impact relationships — the relationship of impact indicators to the amount of recreational use

(3) varying tolerance to impacts — differing levels of tolerance among environments and user groups

(4) activity-specific influences — some activities create impacts faster or to a greater degree than others

(5) site-specific influences — the impact of recreational use may depend greatly on the time and place of human activity

To use the visitor impact management process, existing information is reviewed (along with management objectives), key impact indicators are selected, standards (desired conditions) for key impact indicators are defined, standards and existing conditions are compared, probable causes of impacts are identified, alternative management strategies are generated, and selected strategies are implemented and the results are monitored.

At Glacier National Park the visitor impact management process was used for the Logan Pass / Hidden Lake trail, a highly used frontcountry destination. Many of the adverse impacts on the alpine environment had been previously corrected by installing a boardwalk along the most used portion of the trail to prevent widening and subsequent degradation of the alpine ecosystem. Standards were set for the trail to the Hidden Lake viewing platform, for a transition area extending 500 feet out from the platform, and for the remainder of the trail to the lake; these three areas generally reflect the changing character of the visitor experience on various sections of the trail. It was found that the transition area had the greatest level of unacceptable impacts, and it was determined that different activities had varying levels of impact (e.g., vegetation and wildlife photography, scenic photography). The indicators that were defined to measure impacts included the trail treadway width, the width of the vegetation impact zone on either side of the trail, and the surface area requiring rehabilitation. Since the impacts were being caused by visitor activities rather than carrying capacity problems, alternatives to correct the situation focused on design and informing visitors about how certain uses affect the resource.

At Buck Island Reef the park staff wanted to establish a data base for making future decisions about the use of the underwater snorkeling trail. The trail is a tremendous attraction, and impact indicators related to the quality of experience and measures of crowding. Instead of asking whether visitors felt crowded, visitors were asked how encounters with other visitors influenced their experience, with decreased enjoyment then being an indicator of crowding. Managers can now use this data to establish standards for the future.

VISITOR COMMUNICATIONS THAT SHAPE EXPECTATIONS

James Gramann, Ph.D., Associate Professor of Recreation, Texas A&M University

Visitor communications play a critical role in managing visitor use and reducing impacts. Getting accurate information to park visitors helps shape their expectations, conveys the options that are available, and explains ways to help protect park resources. As discussed below, surveys are one way to find out whether or not visitors' expectations are being met.

Expectations are the experiences that visitors suppose will occur in a specific area. Those expectations can be shaped by communication. Visitors have diverse expectations, and any planning needs to allow for a diversity of visitor experiences while protecting natural and cultural resources and ecological systems. Expectations, diversity, and protection can all be influenced by communications.

Expectations. Expectations affect visitors' responses to social conditions. Encountering more people than expected leads to a perception of crowding. In a Grand Canyon visitor use survey, when people were asked whether there was any place in the park where there were too many people, 70% of the visitors in automobiles said no, and 74% of bus tourists said no. This result may be due to a lot of media publicity that has prepared people to expect crowding in the Grand Canyon. It is important to get information to people as early as possible in trip planning.

Expectations also affect trip satisfaction. At the Grand Canyon people expect to see spectacular scenery, and 94% of the visitors rated their visit as very good, excellent, or perfect. If crowding or other conditions do not interfere with visitors' primary goals, then people will be highly satisfied. You need to give people information that will allow them to achieve their primary goals.

Diversity. If visitors have knowledge of diverse opportunities, they will select for themselves the situation they are looking for. Again, information is an important tool. At Grand Canyon visitors where asked if they deliberately visited the park in low use periods to avoid crowds: 40% of the off-season visitors said yes, indicating they had consciously selected this period for their visit to escape crowding. If diversity is lost, some existing users will be disenfranchised. Grand Canyon is a good place to preserve diversity, and it must be done consciously (doing nothing will not preserve diversity).

Protection. One of the most cost-effective ways to protect natural and cultural resources by reducing visitor impacts is through interpretation. At Shiloh National Military Park studies were done of damaging or depreciative behavior when no interpretive message was given to a group, compared to behavior when an interpretive message was given; the result was that damaging behavior went down by 88%. Communication increases awareness of the negative impacts of specific actions on resources, and this reduces that impact, including impacts that are cumulative in nature (e.g., thousands of people touching a stalagmite in Carlsbad Caverns). Interpretation can be used to clarify cause-effect relationships, and to describe reasonable alternatives to damaging behaviors.

VISITOR TRANSPORTATION SYSTEMS

Bill Byrne, Vice President, Transit Specialist, BRW, Inc., Denver, Colorado

A well-planned transportation system is vital to improving the current problems at Grand Canyon and in planning its future. BRW, Inc., has planned transportation systems for Deadwood, South Dakota, and Cripple Creek, Colorado, and firm representatives helped plan the 16th Street Mall in Denver. These systems provide workable, high-quality designs that meet the needs of management and passengers, and that fit with the surroundings.

Problems in Deadwood, South Dakota, and Cripple Creek, Colorado, included congestion in the historic districts, pedestrian/vehicular conflicts, a perceived lack of parking, impacts on historic resources, poor visitor orientation and information, and safety problems on access routes.

The first objective for both these transit systems was to reduce vehicular circulation by providing short-term parking, free shuttles, pedestrian facilities, fringe and remote parking with connecting shuttles, signs, and orientation. The second objective was to encourage efficient use of existing parking by establishing on-street parking fees and providing signs and orientation, information and management, new surface parking lots, and free shuttles.

Perceptions that parking was lacking had to be corrected through better information programs. This information was provided through travel agencies, tourist advertisements, guidebooks, regulatory and informational signs, visitor information centers, and at bus stops.

Elements of a successful transportation system are convenient and accessible facilities; good, clear information/orientation; and active management. For good management, reserve resources are needed for peak days or for occurrences out of the ordinary.

For a transit system to be successful (like the system at Disney World), it has to meet several criteria:

> Transportation must be convenient.
>
> The system must provide a quality experience that people will want to use.
>
> Information must be understandable and reassuring (signs must be so simple that no one can miss them or fail to understand them; if routes loop or vary, people need to know that so they won't be disoriented; good, professional signs instill confidence in the system and assure people service is reliable). A feeling of comfort is important: People need to know if they can get somewhere, they can also get back.
>
> Management must constantly monitor operations and collect information (radios for drivers, a way to respond to situations, resources to respond with, communications with users to find out problems with the system).

Information is the most important element of a transportation system, followed by effective signs to communicate that information simply, and with multiple repetition. Ways are needed to encourage the distribution of people and to provide a diversity of experiences. Different users have unique needs (visitors with disabilities, tent campers vs. RVs vs. motel guests). Solutions are usually integrated with other plans, e.g., at Grand Canyon the location of the visitor center/orientation center will depend on the circulation system that is selected.

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APPENDIX B: INTERIM SOLUTIONS FOR GRAND CANYON'S SOUTH RIM

Since the workshop participants had seen a number of the problems affecting the visitor experience firsthand on the South Rim of Grand Canyon, they were asked to suggest actions that the park staff could start working on immediately. Their suggestions follow.

Signs

Improve signs; pay attention to simple directions and messages. Do a comprehensive sign program so that all park signs have a coordinated appearance (this should not be done haphazardly by area). Realize that the sign program may change as a result of the general management plan.

Improve night signs so they are legible; beige and brown signs are hard to read at night.

Post seasonal signs outside Williams and Flagstaff advising people that rooms at the park may be or are filled (do in cooperation with local chambers of commerce).

Post a sign outside the park entrance about fees.

Visitor Orientation / Information

Have trip planning information and tour/activity options (for example, one, two, and three hours or days) for visitors on handouts. Answer the 20 most frequently asked questions as a handout.

Fix the park radio (if the radio isn't functioning, cover the sign); improve telephone communications, especially for Grand Canyon National Park Lodges.

Put orientation guides on each bus (maybe use concession employees).

On peak days, when traffic backs up at the entrance gate, use roving hosts to hand out information and answer questions while visitors are waiting.

Make sure there is a process to update information and that the correct information is given out to visitors before they arrive; ensure that information is kept current.

Transportation Systems / Parking

Run the West Rim shuttle until a half hour after sunset. Run the village shuttle well past the last dining period.

Develop crowd control measures at major transit stops, for example, use gates/fences to get people to start lining up. Provide seating at major waiting areas.

Allocate parking near the lodges for guests only, not for employees. Employee parking spaces should be farther from facilities. Identify employee cars.

Redesign/develop signs at bus stops so that they are visible from cars; give hours of operation and frequency of trips. The shuttle bus stops aren't clearly marked (especially at the visitor center). There should be a distinctive marking/logo just for shuttles.

Redesign the bus shelter.

Maximize the use of existing parking areas by revising the striping plan; consider one-lane traffic flows with parking to one side (rather than parking on both the right and left).

Investigate the possibility of funding from the Federal Transportation Administration for demonstration transportation projects, as well as from the Federal Highway Administration for trails.

Interpretive Programs

Provide interpretive talks/entertainment in the plaza at Bright Angel, and use that format to give information about scheduled interpretive programs and how visitors can help maintain the resource.

Station a ranger along the rim, and provide information hosts in high visitor use areas to answer questions.

Provide better interpretive waysides on the rim.

Visitor Facilities/Services

Provide additional seating in the village that reflects the area's historic character.

Provide more toilets at overlooks, especially Mather Point. Use vault toilets, which do not need to be serviced everyday.

Provide more evening and night activities.

Increase food-service hours, and use food carts and soda machines to increase food service capacity. Provide water or a food/drink cart at trailheads.

Move check-in at the Yavapai Lodge to the parking side (circulation is confusing).

Visual Appearance / Aesthetics

Remove sod along the rim walkway so that natural vegetation is growing on both sides.

Screen service areas, dumpsters.

Do a comprehensive lighting plan. Provide lighting in visitor use areas; solar lighting might be acceptable in some areas. Provide low-level lighting on pedestrian paths and overhead lighting at the Yavapai Lodge.

Trails

Provide bike trails and rentals.

Widen pedestrian paths along the rim (especially to the first overlook). Right now rocks limit pedestrian flow, and people go outside the defined path to pass slower walkers.

Finish walk systems that have already been started.

Improve pedestrian access from the parking lot by the railroad tracks to the rim.

Operating Procedures

Schedule all deliveries during nonpeak periods.

Ensure that dog owners clean up after their pets.

As a short-term fix for congestion, immediately direct people who just want to see the canyon to Mather Point.

Provide expanded concession employee education programs so they can knowledgeably answer visitor questions.

Develop a communications network with tour companies to find out who their clients are and what problems/complaints about the park experience have been noted, as well as positive points. Start a focus group with the drivers.

Talk to visitors through surveys and use studies to find out what they think about the park. Find out why people do not come to the park (conduct random telephone surveys).

Consider additional revenue-producing opportunities for the natural history association.

Ensure that information about accidents is reported directly from the medical clinic in case a ranger is not notified to file a report; discuss causes of accidents immediately and take corrective action if needed.

Evaluate building uses in the core area to make use more efficient now.

Outside Contacts

Develop a stronger partnership with Tusayan, schedule regular meetings (including the Forest Service) to discuss problems. Build a working relationship with the people involved in the land exchange.

Establish a park foundation; no friends of the park association now exists.

WORKSHOP PARTICIPANTS

SPECIALISTS FROM OUTSIDE THE NATIONAL PARK SERVICE

Bill Bohannon, General Manager, Grand Canyon National Park Lodges, Arizona

As general manager of Grand Canyon National Park Lodges, Mr. Bohannon oversees 915 guest rooms, 10 food and beverage outlets and gift shops, 2 service stations, a public garage, concession operations at Phantom Ranch, a 33-vehicle bus fleet, a 98-site trailer park, a remuda for 140 trail mules, and an extensive number of employee housing units. The company has 1,200 seasonal employees. Mr. Bohannon is on the Board of Directors of the Arizona Hotel and Motel Association and was recently appointed by the governor to the Advisory Council of the Arizona Office of Tourism.

Bill Byrne, Vice President, BRW, Inc., Denver, Colorado

Mr. Byrne is a transportation planner and engineer specializing in multi-modal transportation planning. He has developed plans and service concepts for many special transportation systems, including the shuttle system on Denver's 16th Street Mall (a system that serves over 12 million passengers per year) and in the historic mining and low-stake gaming towns of Deadwood, South Dakota, and Cripple Creek, Colorado.

Russell Butcher, Regional Director, National Parks and Conservation Association, Cottonwood, Arizona

Mr. Butcher is the Pacific Southwest regional director of the National Parks and Conservation Association. He is the author of four books and has written conservation editorials for the *New York Times* and worked for the National Audubon Society, Save-the-Redwoods League, Sierra Club Books, and the Museum of New Mexico.

J. Michael Carrigan, Assistant Director, Museum of American History, Smithsonian Institution, Washington, D.C.

Mr. Carrigan is director of exhibitions and public spaces at the National Museum of American History. He developed a 10-year plan, now being implemented, to redesign and reinstall all the exhibitions and public spaces of the museum. Formerly the exhibits officer for the Library of Congress and director of exhibitions for the National Portrait Gallery, Mr. Carrigan has planned, designed, and researched more than 300 major exhibitions and public space projects. He has also lectured and consulted with various museums and institutions about exhibition design and public space planning.

Alan Graefe, Ph.D., Associate Professor of Leisure Studies, School of Hotel, Restaurant, and Recreation Management, Pennsylvania State University, University Park, Pennsylvania

Dr. Graefe is in charge of the leisure studies graduate program at Pennsylvania State. He holds his doctorate in recreation and resources development from Texas A&M University. His principal teaching and research interests include recreation resource planning and management, human dimensions of wildlife and fisheries management, and outdoor recreation behavior. He is a co-author of the "Visitor Impact Management" report done through the National Parks and Conservation Association.

James Gramann, Ph.D., Associate Professor of Recreation, Park and Tourism Sciences, Department of Rural Sociology, Texas A&M University, College Station, Texas

Dr. Gramann received his doctorate in leisure studies from the University of Illinois at Urbana-Champaign. He has undertaken numerous works on visitor behavior and use at some of the nation's most significant parks, such as Carlsbad Caverns and Yosemite national parks. Although he is a sociologist by education, he has experience as an interpreter for the city of Seattle and has taught courses at both Texas A&M University and the NPS Albright Employee Development Center on visitor behavior and interpretive services. His research interests are in the sociological aspects of recreation behavior and communication processes.

Keith Kambak, Vice President of Resort Recreation, Walt Disney Company, Lake Buena Vista, Florida

Mr. Kambak is responsible for recreation operations for the Walt Disney Company. His responsibilities include overseeing day-to-day operations at the Fort Wilderness Resort, five championship golf courses, two water parks, and Euro Disney in France. In addition, he is responsible for the day-to-day operations of several entertainment complexes in California.

Laura Loomis, Deputy Director of Conservation Programs, National Parks and Conservation Association, Washington, D.C.

Ms. Loomis's primary responsibility is to supervise NPCA's research efforts. For the past 10 years she has directed the association's carrying capacity project, which resulted in the publication of *Visitor Impact Management: A Review of Research and Visitor Impact Management, A Planning Framework*. She co-authored a volume of the NPCA's *National Park System Plan* that focuses on visitor use in the national parks and is entitled, *Park's and People, A Natural Relationship*. Recently she organized a workshop on carrying capacity in protected areas for the IV World Parks Congress, held in Venezuela.

Robert Manning, Ph.D., Professor of Natural Resources, School of Natural Resources, University of Vermont, Burlington, Vermont

Dr. Manning is a professor of natural resources and the chairman of the recreation management program at the university. He also holds a research appointment with the National Park Service to conduct studies on carrying capacity and visitor use management. He is the author of *Studies in Outdoor Recreation: Search and Research for Satisfaction*, Oregon State University Press.

Allen Naille, II, President, Amfac Resorts, Inc., dba Fred Harvey Company, Flagstaff, Arizona

Mr. Naille's experience ranges from college summers spent in Grand Teton National Park for Rock Resorts, Inc., to general management of properties in Death Valley National Monument and Grand Canyon National Park. He holds a B.A. in hotel, restaurant, and institute management from Michigan State University and serves on the President's Advisory Board for Northern Arizona University. He is also a member of NPCA's Advisory Council for Arizona/New Mexico.

Peter Patten, Resort and Tourism Planner, David Evans and Associates, Inc., Portland, Oregon

Mr. Patten was the director of community development for the town of Vail for seven years. Vail's rapid growth presented many difficult challenges in balancing the needs of visitors, local residents, and the environment. Under his leadership Vail generated creative, unique, long-range plans, along with capital improvement projects to proactively address these issues. Currently he is working on several development plans for resort areas throughout the west.

Al Shacklett, Manager, Industrial Engineering, Walt Disney Company, Lake Buena Vista, Florida

Mr. Shacklett is an expert in the field of "Guestology," the study of guest behavior in theme park environments. While with the Walt Disney Company, he has worked extensively on the analysis and management of projects related to the planning and operation of theme parks, recreational developments, and transportation systems. He has helped a number of public organizations with visitor circulation issues, including the city of Orlando, Florida, and the National Zoo in Washington, D.C.

Chuck Spliedt, Admissions Coordinator, National Aquarium, Baltimore, Maryland

Mr. Spliedt currently manages the frontline staff at the National Aquarium, which operates the aquarium's ticketing and entry system. As part of his work, he develops and implements visitor flow system adjustments and is responsible for other visitor service aspects.

Doug Widmayer, Associate, Robert Peccia and Associates, Inc., Helena, Montana

As a senior traffic and transportation engineer, Mr. Widmayer is working with the National Park Service on various projects, including the general management plan for Grand Canyon and the environmental impact statement for Rock Creek Park Tennis Center. He has also recently completed transportation plans for Helena and Bozeman, Montana, as well as a transit study for Helena.

NATIONAL PARK SERVICE PARTICIPANTS

Grand Canyon National Park

Robert Chandler, Superintendent
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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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